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OBSERVATIONS UPON CARDIOVASCULAR SYPHILIS*

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AS is well known to all of you the usual point at which syphilis involves the cardiovascular system is in the aorta. Whether the heart is affected depends almost wholly on the part of the aorta to be involved, since an aneurysm per se has little or no effect upon cardiac efficiency. If, however, the first two centimeters of the aorta, the region of the aortic ring, the cusps of the aortic valve, the sinuses of Valsalva and the mouths of the coronary arteries are the seat of the luetic process, cardiac damage is inevitable. In the majority of cases this takes the form of more or less severe aortic regurgitation. In a much smaller number of cases the coronary lesion may be of greater importance.

Aortic regurgitation was found by Clawson and Bell[1] in 36.5 per cent of 126 cases of luetic aortitis. Our own series of 80 cases gives a slightly lower figure of 27.5 per cent, so that a figure of about 30 per cent is probably a fair average. In no case of Clawson and Bell's series, or of our own, was there aortic stenosis. This point, I believe, is well worth emphasis.

If one contrasts the pathogenesis of the aortic lesions of syphilis with those of rheumatic fever one will see, I believe, how syphilis must inevitably produce regurgitation if it involves the valve at all, whereas rheumatic endocarditis can give either regurgitation or stenosis or most commonly both. Normally the cusps of the aortic valve meet each other and the aortic wall at a single point known as the commissure. It is distinctly unusual for a separation of as much as half a millimeter to be found under normal conditions.

In rheumatic fever the first stage of endocarditis is a fine deposit of fibrin along the line of closure. This fibrin is deposited along the entire margin but only close to the commissure does it tend to glue the valve margins together. Into this fibrin grow fibroblasts tending to organize it, and where two valves are partially interadherent the fibroblasts may grow across and cause a firm fibrous union. Toward the center of the valves the systolic rush of blood is usually sufficient to prevent interadherence, but the freshly formed fibrous tissue, as it shrinks tends to curl back the edge, rendering it less mobile, and in some instances tightening it like a bowstring. The eventual result of this process will be some such effect as is illustrated in figure I,

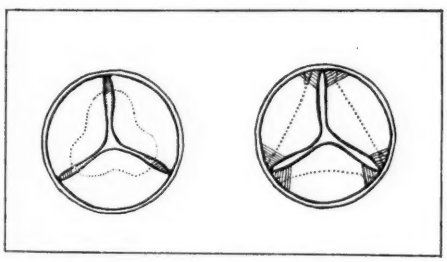

FIG. I. FIG. II.

a valve in which both stenosis and regurgitation are apt to be present though either one may predominate.

The course of the luetic process is entirely different. The luetic process starts as an obliterative endarteritis of the vasa vasorum. It is consequently the aortic wall and the areas of attachment of the cusps to it which are affected. The vasa vasorum actually enter the cusps along their lateral borders but pass only a short way into them. Gummatous foci probably develop as they are known to elsewhere in the aorta with an initial destruction of tissue followed by fibrosis and scar formation. In the destructive stage the commissure is destroyed. In the reparative phase the cusp becomes anchored by dense scar tissue at a new point a millimeter or two lateral to the original commissure so that a space of 1 to 3 mm. is left between adjacent valve attachments. Adhesions form in syphilis also, but in this instance they form between the outer surface of the cusp and the sinus of Valsalva, not between the inner surface of one cusp and its neighboring cusp. As fibrosis progresses the valve is drawn tighter and tighter back toward the sinus and the bowstring effect becomes very marked. The effect of this series of changes is inevitably to produce regurgitation without any combined stenosis as in the case of rheumatic lesions. The process is diagrammatically illustrated in figure II.

It is extremely dangerous, of course, to use

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such a word as "never" in referring to any biologic condition. Among pathologists, however, there is a remarkable unanimity of opinion in regard to the absence of stenosis in purely luetic aortic valve lesions, although Karsner[2] believes it may occur. Certainly, however, it is of such rarity that from the clinical point of view it may be safely disregarded. Nevertheless many clinicians believe that they have seen aortic stenosis of luetic origin. That the clinical signs of aortic stenosis may be found in some cases I do not doubt as the following case history will show, but if such cases are followed to the autopsy table I believe that a coincident rheumatic infection will usually be demonstrable or that no true stenosis is present after all.

CASE HISTORY

(Necropsy 6482)

A fifty-year old native white man reëntered the hospital in March, 1932, for the third time because of marked dyspnea, orthopnea and edema. Up to three years ago he had been perfectly well. He denied venereal disease and rheumatic infections. At that time he had a single attack of loss of consciousness lasting fifteen minutes. The following morning he felt perfectly well. Two years ago he began to have occasional attacks of precordial pain for which morphia was given with relief. One year ago he had a severe and prolonged attack of dyspnea and since then has been practically unable to work and has complained of sleeplessness and dyspnea. He lost about 30 pounds in weight in the course of two months. Eight months ago he entered another hospital where he remained for one month with some relief and since then has been twice admitted to this institution. Ten days ago his ankles and legs became swollen for the first time.

P. E. The findings on all entries were essentially the same except for the appearance of edema and ascites on the final admission. The heart was greatly enlarged to the left. The sounds were of good quality except for an absent second sound in the aortic area. A high pitched blowing systolic murmur and a soft blowing diastolic murmur were heard at the apex. One examiner, only, out of many thought there was a mitral presystolic. At the base there were a rough systolic and a blowing diastolic murmur in the aortic area. A systolic thrill was felt in the aortic area and also at the apex. B. P.: 135/55. ECG: Rhythm regular; right axis deviation. Seven foot plates showed considerable enlargement, chiefly downward and to the left. Aorta tortuous but not dilated. A fast film of the aortic area (done at the Peter Bent Brigham Hospital) showed no evidence of aortic calcification. The Wassermann and Hinton reactions were strongly positive.

Clinical opinions varied widely. All examiners agreed that he had aortic regurgitation, the majority felt he had aortic stenosis, and one felt that there was mitral stenosis. The majority again felt that the etiology of his heart lesions was lues, one refused to commit himself and one held it to be rheumatic.

NECROPSY

The significant findings other than generalized chronic passive congestion were limited to the heart and aorta. There was a slight fibrinous pericarditis. The heart weighed 725 grams. All cavities were dilated but the right auricle was proportionately much larger than the others. Both ventricles were hypertrophied, the walls measuring, in spite of the dilatation, respectively 6 mm. for the right and 14 mm. for the left. The muscle appeared normal in color and consistency. The tricuspid valve measured 14.4 cm. in circumference, the pulmonary 8.1. They were both normal in appearance. The mitral valve was definitely stenotic just admitting the index finger and measuring 6.2 cm. in circumference. There was complete fusion and marked thickening of the cusps, with shortening and thickening of the chordae tendineae. Along the free margin and extending backward onto the surface of the leaflets was a fine, granular, fibrinous deposit. The aortic valve showed definite separation of the cusps at each of the commissures, some fibrous thickening and retraction of the edges and a slight, fresh granular deposit along the margins which at one point extended down over the surface of the cusp onto a localized patch of ventricular endocardium 1 cm. in diameter in a pannus-like manner. The valve ring measured 7.4 cm. in circumference.

Coronary Arteries. The left coronary and its branches were negative. The orifice of the right coronary was markedly narrowed, partly by scar formation about its mouth and partly by a calcified plaque lying just above it.

Aorta. The ascending portion, starting immediately above the valve, was markedly dilated measuring 12.2 cm. in diameter, the dilatation diminishing as the arch was reached and ceasing abruptly at the level of the third intercostal artery. Throughout the involved portion, the intimal surface showed patchy atheroma with intervening stellate and linear depressed scars typical of luetic aortitis. In the scarred areas the wall was markedly thinned and definitely translucent when held before a strong light.

The anatomic findings were characteristic of luetic aortitis with aneurysmal dilatation and aortic regurgitation, of long-standing, mitral stenosis certainly rheumatic in origin and of an acute, probably rheumatic, pericarditis and endocarditis of both mitral and aortic valves. The aortic valve measured 7.4 cm. in circumference, well within normal limits, and certainly could not be considered stenosed.

The exact mechanism of the production of the systolic thrill is open to doubt. It may have been due to the aneurysm, possibly to the acute endocarditis, though the vegetations seemed too small to make this probable, or possibly to a relative stenosis of the aortic valve since both the aorta above it and the ventricle below it were nearly twice normal size.

A much commoner finding in cases of luetic heart disease is a dilatation of the aortic ring and hence an added element of *relative* insufficiency of the valve. Most descriptions of the pathology of the disease say or imply that this is a specific element of the luetic process.

Since relative dilatation of the aortic ring is not extremely rare in cases of diffuse cardiac dilatation of rheumatic or of hypertensive origin, it seemed possible that in luetic heart disease also the aortic dilatation might be at least in part simply an evidence of generalized car-

diac dilatation and not a specific process. I believe that the figures presented in the tables suggest that this is the case. The valves were measured with the usual routine technique after opening. The first group in table I are the six cases out of our twenty-two which showed dilatation of the ring. The second group are six of the remaining cases, showing no dilatation of the ring, but all of which had considerably deformed valve cusps and well-marked cardiac hypertrophy.

TABLE I

	Aortic	Mitral	Tricuspid	Pulmonary
Estimated normal range	7-8	9-11	11-13	8-9
Autopsy No.				
3656	10	12	14	8.5
3759	8.5	12.5	15.5	9
3912	9.5	13	15.5	9.5
4438	9	12	15	8
4972	9.5	13	15	10.5
6180	9	12	14.5	9.5

TABLE II

3729	7.5	10	12.5	8
3837	8	11	12.5	8
5140	8	10	12	8
5522	8	10.5	12	8
5570	8	9	13	7
5858	7	11	12	8

It is evident in table I that in all cases the figures for the mitral and tricuspid valves and in half of the cases for the pulmonary valve are definitely beyond the normal limits. On the other hand in table II none of the figures are beyond normal. There can be no question that generalized cardiac dilatation was present in the first six. Moreover, the maximum aortic valve circumference in the group was 10 cm. whereas we have in our postmortem series one case of rheumatic myocarditis without endocardial lesions with an aortic ring of 11 cm. and also a hypertensive case showing the same figure. The degree of dilatation of the aortic ring found in this group of luetic hearts lies within the limits found in diffuse dilatation of the heart from other causes. Direct proof is therefore demanded before we are justified in assuming that the dilatation of the aortic valve ring is a specific luetic phenomenon.

One other point is worthy of mention. Of the series of eighty cases of luetic aortitis, fifteen showed narrowing of the mouths of one or both coronary arteries. All but one of these lay in the group with definite valve involvement. As a general rule, therefore, it seems justifiable to assume that syphilitic involvement of the coronaries need not be feared if there is no evidence of aortic regurgitation. A luetic patient may, of course, and in fact seems rather prone to have ordinary atheromatous lesions which may well involve his coronaries. In the fifteen cases with luetic involvement there were no gross infarcts of the heart though three arteries were completely occluded and several others markedly narrowed. On the other hand one case of myocardial infarct was found with no involvement of the mouths of the coronaries, only slight atheroma and no demonstrable thrombus.

REFERENCES

1 Clawson, B. J., and Bell, E. T.: The heart in syphilitic aortitis. Arch. Path. 4:922, 1927.
2 Karsner, H. T.: Human Pathology, Philadelphia, J. B. Lippincott Co., p. 466, 1932.

THE DIAGNOSIS OF CARDIOVASCULAR SYPHILIS*

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THE diagnosis of cardiovascular syphilis is one of the most important problems of internal medicine today for three reasons. In the first place, syphilitic disease of aorta or heart of any considerable degree is very serious, its presence generally signifying that death is close at hand or at any rate not many years away. In the second place, if a diagnosis of aortic or cardiac syphilis can be made early or can be reasonably suspected, treatment will be much more effective than in later stages of the disease. In the third place, the diagnosis is often very difficult and demands the keenest appraisal of all data by an experienced worker.

In this paper I shall discuss the subject from various aspects, including the absolute and relative incidence of the disease, and its relationship to the history of the primary lesion, to sex and age, to social status and to occupation, and to symptoms, signs, and laboratory data. My information is based on published work of others and on two series of cases, one consisting of 78 clinical cases of my own seen in private practice in the last ten years, and the other made up of 50 autopsied cases at the Massachusetts General Hospital, also covering a period of the last ten years. Gaston of the fourth year class of the Harvard Medical School has assembled for me the data on the fifty autopsied cases.

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INCIDENCE OF CARDIOVASCULAR SYPHILIS

In the very first place it is of vital importance in diagnosis to know the frequency with which a given disease occurs in any given community. The frequency of cardiovascular syphilis may be considered to vary roughly with the inci-

dence of syphilis itself. The incidence of syphilis varies largely with the level of civilization in most parts of the world; the lower the level, the more the syphilis and along with it the more the cardiovascular syphilis. Hence with perfect justification we should expect to find syphilis of aorta and heart much more commonly among the more primitive Negroes in the South than in a highly cultured white community in New England, and what statistics we have indicate that this is so.

In a report published some years ago on the incidence of heart disease in Massachusetts and in New England, Jones and I emphasized the relatively low percentage of syphilis as the chief causative factor of heart or aortic disease among 3000 cardiac patients in New England, of whom 2421 showed organic changes. These cases were taken equally from three groups; general family practice, open hospital wards, and my own consulting practice. There was much more cardiovascular syphilis in the hospital ward group than in my own consulting group. The total for all the groups was, however, only 3.9 per cent. When we announced these findings a few physicians in other parts of the country where evidently there was more syphilis, including that involving the cardiovascular apparatus, suggested that we were either overlooking a good many cases up here or else concealing our peccadilloes. This I am sure is not so however. A few days ago when I reviewed my private cases I found that I had made the definite diagnosis of cardiovascular syphilis in only 78 out of 4,446 consecutive cases which is 1.8 per cent. Of these 4,446 cases, three quarters (actually 73.4 per cent) or 3,263 had organic heart disease. The 78 syphilitic cases comprised 2.4 per cent of this organic series*. There were 40 questionable cases, which added to those that were clear would make 118 cases or 3.6 per cent of the 3,263 cases of organic heart disease. Let us suppose that I overlooked half of all the cardiovascular syphilis in my private patients, which is possible but unlikely; even then there would be only 156 cases (or 4.8 per cent) or if we include suspected patients 236 cases (or 7.2 per cent) out of the lot. That the original figure of 2.4 per cent in the private patients is not far wrong is supported by my experience with postmortem findings in this same group of private patients. During the past few years there have been 25 postmortem examinations among these cases: not one of the 25 showed any sign of cardiovascular syphilis at autopsy. It is of interest, however, that a private case that did show such a condition postmortem never quite became a patient of mine. He was on his way to keep his first appointment at my office, but dropped dead just before he entered the building.

Meanwhile in this last decade three other types of heart disease have far outnumbered that due to syphilis in my own practice; they are coronary, hypertensive, and rheumatic in the order named. Along with cardiovascular syphilis, as less frequent types of heart disease in private practice have been congenital defects, thyrotoxic hearts, subacute bacterial endocarditis, and the cor pulmonale. Neurocirculatory asthenia, a functional disorder, has been the most common cause of symptoms in the 26½ per cent of my private patients who showed no organic heart disease.

Turning now to the autopsy series at the Massachusetts General Hospital from 1921 through 1931 we found only 59 cases of cardiovascular syphilis among 2,100 autopsies. This is 2.8 per cent. For further data nine cases of the 59 had to be discarded because of records inadequate for analysis for the present study. Important conditions, namely aortic regurgitation, aneurysms, and angina pectoris, occurred in only half of the selected 50 cases. Twenty-five of the 50 cases had luetic aortitis without aortic regurgitation, aneurysm, or angina pectoris and they all died of disease other than the aortitis itself. Only four of this group of 25 had even cardiac deaths; two of these four died from congestive failure due to chronic hypertension and the other two died from complicating coronary disease (not luetic). On the other hand eleven of the 14 cases of aortic regurgitation (or 79 per cent) died cardiac deaths (mostly from congestive failure), while four of the 13 cases with aortic aneurysms died cardiovascular deaths, three due to rupture of the aneurysm. Three of the cases had both aneurysm and aortic regurgitation.

During the ten year period when 59 cases of cardiovascular syphilis came to autopsy at the Massachusetts General Hospital among 2,100 necropsies there were three other conditions that were found more commonly, as in the clinical series, but not so preponderantly as we might expect since here we are dealing with individuals of a different social level and also we are discovering that half of the luetic cases have aortitis that would produce neither symptoms nor signs. Cardiac enlargement without valvular disease or adhesive pericarditis, but due in the main to chronic hypertension, far outnumbered the cases of cardiovascular lues, actually over 3 to 1 (191 to 59). Coronary disease was also much more common and even actual coronary thrombosis or occlusion was found

*Of these 78 private patients 21 are known to be living, 50 are known to be dead, and 7 could not be traced.

Of the 50 patients known to be dead, the date of death could not be ascertained in 3 cases. Of the remaining 47, 5 died in less than 6 months after the onset of the first symptoms and signs, 9 between 6 months and 1 year, 9 between 1 and 2 years, 11 between 2 and 3 years, 8 between 3 and 4 years, 2 between 4 and 5 years, 1 between 7 and 8 years, 1 between 8 and 9 years, and 1 lived more than 10 years. The average duration of life after the onset of symptoms in these patients was 2 years and 5 months.

Of the 21 patients known to be living, 14 are in good condition, 6 are in fair condition, and 1 is not doing well. The average duration of time from the onset of symptoms in the living patients is 3 years and 6 months.

53 times among these 2100 autopsies. Mitral stenosis of high degree was as common as cardiovascular lues; the ratio was 60 to 59; there were many other cases showing either chronic mitral valve disease *without stenosis* or acute endocarditis of the mitral valve (rheumatic or terminal). Some other cardiovascular lesions that may be given for comparison with lues in this series of 2100 autopsies were acute pericarditis (63 cases), chronic pericarditis (27 cases), aortic stenosis (36 cases), non-luetic aortic regurgitation (17 cases), subacute bacterial endocarditis (23 cases) the cor pulmonale (5 cases) and patency of the ductus arteriosus in four individuals more than one year old.

In comparison to the incidence of cardiovascular syphilis among the autopsies at the Massachusetts General Hospital a series reported by Cowan and Faulds* in 1929 may be of interest. Among 1,000 consecutive necropsies in Glasgow, Scotland, 60 (or 6 per cent) were found to have cardiovascular lues and these 60 cases made up 15.3 per cent of all cases with cardiovascular disease.

HISTORY OF SYPHILIS

Let us turn now to other etiologic relationships that are of importance in diagnosis. The history of a primary lesion is of some importance, as is also the denial of such a lesion; this information becomes of less and less value, however, when we deal with more unreliable characters and of course it is just such persons who are somewhat more likely to acquire syphilis originally. Since two or three per cent of the total accumulation of data on which to base a diagnosis of cardiovascular lues may be ascribed to the history of a chancre 10 to 40 years before (averaging a little over 20 years), it is of some use always to make enquiry, especially when the diagnosis is in doubt. Full routine quizzing of patients is often neglected and this should not be. At this point, however, it must be admitted that a positive history of a chancre may lead one astray, just as may a positive Wassermann or Hinton reaction. It was largely such information that caused a number of cases to be wrongly diagnosed cardiovascular syphilis during the last decade at the Massachusetts General Hospital when some other condition, especially rheumatic aortic valvular disease, was found present at autopsy. More cases, however, were missed than overdiagnosed, in the ratio of 5 to 1 (actually 36 to 7).

In connection with the history of a chancre, a word should be said about the search for a penile scar. This is of a little value and certainly much neglected. The presence of such a scar was noted in only two of the 50 postmortem cases already referred to.

*Cowan, J., and Faulds, J. S.: Syphilis of the heart and aorta. Brit. M. J. 2:285 (Aug. 17) 1929.

OTHER ETIOLOGICAL RELATIONSHIPS

Sex. The male sex far outnumbers the female in the incidence of cardiovascular syphilis. In my private practice there were 66 men and only 12 women. In the Massachusetts General Hospital postmortem series there were 42 men and 8 women. This is the common experience.

Age. The commonest age for the appearance of symptoms or signs permitting the diagnosis of cardiovascular syphilis is early in the sixth decade. This applies to white patients. The Negro averages five to ten years younger. Over half (51.3 per cent) of my 78 private cases were between 50 and 60 years of age when they were first diagnosed. Another 24.4 per cent were between 40 and 50, 6.4 per cent were under 40, one case was only 20 years old (congenital lues) and 17.9 per cent were over 60. The range of age at death in the other series of 50 autopsied hospital cases was as follows: 20 to 30 years 1 case, 30 to 40 years 7, 40 to 50 years 10, 50 to 60 years 19, over 60 years 13. There was one case of congenital syphilis in my private group. Although rare cases of cardiovascular syphilis in children with congenital lues are on record, well authenticated instances are, however, so rare that we may be justified in saying that cardiovascular syphilis in a child is almost unknown. Also it should be added that cardiac or luetic involvement during the primary or secondary stages of the syphilitic infection sufficient to produce symptoms or signs is extremely rare. Almost all the cases that have been described as having heart or aortic disease due to syphilis under the age of 30 years (with the exception of a few Negroes) are found on careful analysis of the records to have rheumatic heart disease, congenital defects, or neurocirculatory asthenia.

Race. Cardiovascular syphilis is relatively much more common in the Negro than in the white race. The five Negroes in the hospital group of 50 cases here reported are out of proportion to the very small number of Negro patients at the Massachusetts General Hospital. Incidentally it has been my experience to find exceptionally little cardiovascular syphilis in the Jewish race, in large measure, I believe, because of the traditionally moral upbringing and the lack of promiscuity that are characteristic of the Jews. In my series of 78 private patients there were but four Jews, a much lower percentage than in my total practice.

Social status. The higher the social status the less likely is there to be cardiovascular syphilis for two reasons: in the first place syphilis itself is less commonly contracted, and secondly when it is contracted it is much earlier and more adequately treated as a rule than in more ignorant and poorer people. Also I have observed that treatment of the disease is somewhat more effective in the first-named group;

such patients are more intelligent in realizing the need for persistent treatment and they are better able to cut down their activities to suit the demands of a diseased circulatory system.

Occupation. The more laborious the work the more likely are the serious complications of aneurysm and of aortic regurgitation to supervene, and of course once such lesions have developed the greater the risk of rapidly progressive heart failure and of death in persons engaged in heavy labor. Angina pectoris in luetic aortitis may be due either to narrowing of the coronary mouths themselves or to a coincident coronary disease. In either case hard work and long hours would act unfavorably to cause a progression of the trouble.

SYMPTOMS

There are two symptoms that are ordinarily thought to be particularly common and serious in cardiovascular syphilis. They are *angina pectoris* and *cardiac asthma* or *paroxysmal dyspnea* (occurring mostly at night). It is true that these symptoms are serious but they are in no way diagnostic, for they are absent much more often than they are present, and when one encounters patients with these symptoms the chances are about ten to one that syphilis is not the cause in either case. Of my own 78 private patients, 23 had angina pectoris and 18 had cardiac asthma or paroxysmal dyspnea. In the hospital series of 50 autopsied cases only nine had angina pectoris, and only one of the 26 instances of luetic aortitis without aortic regurgitation or aneurysm presented this symptom. That one patient showed occlusion of the mouths of the coronaries at postmortem examination; the other 25 cases of uncomplicated aortitis *had no pain of any sort* even though two of them showed some narrowing of the mouths of the coronary arteries. The other eight postmortem cases that had angina pectoris had aortic regurgitation or aneurysms.

Similarly paroxysmal dyspnea, nocturnal orthopnea, or cardiac asthma occurred almost solely in the autopsied cases showing gross lesions. Only one of the 26 cases of uncomplicated luetic aortitis complained of it.

In a series of 500 cases of angina pectoris I made a diagnosis of positive or questionable cardiovascular syphilis in only six per cent and in a series of 250 patients with cardiac asthma in but 12 per cent. Chronic hypertension is a much more common etiologic factor behind paroxysmal dyspnea than is syphilis in the ratio of 5 to 1.

Pain of other nature than angina pectoris is infrequent in cardiovascular lues except when there is a large aneurysm causing pressure on surrounding structures. In the 25 Massachusetts General Hospital postmortem cases with uncomplicated luetic aortitis with little or no dilatation of the aorta, there was no pain in any case.

Other symptoms like dyspnea, palpitation, precordial aching and tenderness, weakness, syncope, cough and hoarseness are in no way common in or characteristic of cardiovascular syphilis. Of course if there is a brassy cough or hoarseness, one should look for aortic aneurysm. The symptoms of congestive failure are produced by myocardial weakness from any cause.

SIGNS

There are two important groups of signs of cardiovascular syphilis, but only a certain variety of one of these is absolutely diagnostic.

Free aortic regurgitation is commonly found in cases of cardiovascular syphilis and produces a loud blowing diastolic murmur along the left sternal border, also especially loud at the right of the upper sternal border, and frequently transmitted to the apex, and a waterhammer (Corrigan) arterial pulse with wide pulse pressure (which is commonly close to 100 millimeters of mercury with systolic pressure at about 140 to 150 and diastolic pressure at 30 to 40). The beginning of such free aortic regurgitation in a middle-aged person is almost proof of cardiovascular syphilis, but there are exceptions; only last month a patient of mine died at the age of 52 of subacute bacterial endocarditis involving the aortic valve primarily with no trace of syphilis and he had shown free aortic regurgitation for the first time two years before—incidentally his aortic valve was not congenitally deformed but had evidently become infected in middle age and had finally become the seat of a fatal attack of streptococcus viridans endocarditis. Sometimes the diastolic murmur due to luetic involvement of the aortic valve is not marked and the pulse pressure is not great, as in early or slight lesions. When this is so, the diagnosis is all the more difficult. In many of the cases showing free aortic regurgitation there is an Austin Flint murmur at the apex, that is, a functional mitral middiastolic rumble with or without presystolic accentuation. The finding of a murmur of this character, and especially of a diastolic thrill, at the apex, when the aortic regurgitation is but slight to moderate, should cause one to suspect the presence of rheumatic heart disease with mitral stenosis, even though syphilis of the aorta is a correct diagnosis. Lately at the Massachusetts General Hospital we have encountered several cases with the combination of rheumatic mitral disease and luetic aortic disease.

In my series of 78 private patients with cardiovascular syphilis, aortic regurgitation was present in 56 (or 72 per cent). In the hospital postmortem series of 50 cases, aortic regurgitation was present in 14 cases (28 per cent) and in four of these it went undiagnosed clinically.

During the period of ten years covered by this autopsy series there were 17 cases of rheumatic aortic regurgitation and 36 cases of aortic stenosis.

None of the 50 hospital cases of cardiovascular syphilis showed aortic stenosis postmortem. An aortic systolic murmur is commonly found in cases of aortic regurgitation and aortic dilatation from any cause, and should not ordinarily be interpreted as meaning aortic stenosis unless there is a palpable thrill with it, not caused by an aneurysm. Fortunately the differential diagnosis between aortic stenosis and aortic aneurysm is easy, the latter not only being uncommon but also only infrequently attended by both murmur and thrill. In none of the 13 cases of aortic aneurysm in the postmortem series analyzed here was a thrill noted, although basal systolic murmurs were commonly found.

The other important condition that may give rise to signs in cardiovascular syphilis is *dilatation of the aorta, general or localized.* This is, however, a very unreliable ground for diagnosis for not only may there be no aortic dilatation at all in luetic aortitis, but most instances of aortic dilatation do not have syphilis. The majority of the cases of the hospital postmortem series here analyzed that showed luetic aortitis without aortic regurgitation or saccular aneurysms had little or no aortic dilatation, and x-rays that were taken of six of these uncomplicated aortitis patients were reported as normal in four. Aortic regurgitation from any cause, and hypertension, and especially the combination of these two conditions give rise to aortic dilatation that may be quite pronounced, especially on fluoroscopic examination during life, and may be indistinguishable from slight or moderate diffuse aortic dilatation in luetic aortitis. Very marked diffuse aortic dilatation or sacculation is, on the other hand, pathognomonic evidence of aortic lues, but it is of course important on x-ray examination not to be misled by intrathoracic tumors other than aneurysm or by marked elongation and tortuosity of the aorta which will simulate aneurysm of the ascending aorta in the anteroposterior view unless it is checked by observation with the patient in the anterior oblique positions. I have seen in consultation more patients who had been wrongly diagnosed luetic aortitis and aneurysm when they didn't have it than patients in whom the diagnosis was missed, and careless or inexperienced x-ray interpretation has been largely to blame.

On the other hand x-ray study is necessary to diagnose most aortic dilatation and aneurysms. Physical examination is notoriously unreliable in this respect. It is only the exceptional case of aortic aneurysm that shows well-marked increase in supracardiac percussion dullness, tracheal tug, unequal pupils, or inequality of the pulses; and of course it is very unusual in this part of the world, to find a patient with an aneurysm protruding through the chest wall. Of my 78 private patients with cardiovascular syphilis only five had aortic aneurysms; I make a routine of fluoroscoping all my patients myself, so that I feel confident that I have not missed many aneurysmal sacs. Of the hospital series of 13 aortic aneurysms, six came to autopsy undiagnosed largely because they had not been examined by x-ray (some of them were surgical cases without suspicion of cardiovascular disease and as a matter of fact two were x-rayed without showing clear evidence of the aneurysms that were later found postmortem.)

Physical examination failed to reveal increased supracardiac dullness in 23 of the 25 cases of uncomplicated luetic aortitis and most of these 25 cases showed little or no dilatation even at postmortem examination. What is more significant, however, is that in over two thirds of the cases of aortic aneurysm (that is, 9 out of 13) the supracardiac percussion dullness was reported as normal. In half of the 14 cases of aortic regurgitation the supracardiac dullness was noted as increased, but I have an idea that the presence of the aortic regurgitation stimulated special endeavor to find increased supracardiac dullness. It is only exceptional cases, usually of saccular aneurysms of the ascending aorta, that show well-marked percussion dullness to the right of the sternum. Aneurysms of the arch of the aorta and of the descending aorta are nearly invariably missed on physical examination, to be picked by x-ray or postmortem examination.

Pressure signs from aneurysms are as uncommon as are symptoms. When the sacs become large, then there may be pain, hoarseness, pulse changes, and bulging of the chest. Of the 13 autopsied cases of aneurysm here analyzed, three showed pressure pain, signs of pulmonary compression, and hoarseness. None showed inequality of pulses or pupils. One patient with hoarseness was wrongly thought to have an aneurysm as a cause; at postmortem examination there was no aortic syphilis at all.

Cardiac enlargement is found consistently in cardiovascular lues when there is aortic regurgitation but not otherwise; that is, the heart is not enlarged in aortitis or aneurysm without aortic regurgitation, unless there are complications such as hypertension (most commonly), or valvular disease of other origin, or coronary thrombosis. Myocardial syphilis of any important degree is rare.

The heart rhythm is usually normal in cardiovascular lues. Ventricular premature beats occur occasionally, and in cases with low myocardial reserve, especially in those with aortic regurgitation, pulsus alternans may follow such premature beats. Heart block is infrequent; it occurred as partial auriculo-ventricular block in two of my 78 private patients and

in two of the autopsy series. Bundle branch block is sometimes found but is not so common as in coronary disease. Auricular fibrillation is distinctly rare, having occurred in none of my private cases and in only two of the hospital series.

Hypertension is not a manifestation of cardiovascular syphilis. It may occur as a complication; in my series of 78 private patients it was present eight times; in the autopsied cases it occurred relatively more often in the cases wrongly diagnosed luetic aortitis than in those that actually had this disease.

Signs of congestive failure are in no wise characteristic of cardiovascular lues. They are common, however, and are found eventually in at least half of the cases with aortic regurgitation and in some of the other cases, occurring as a rule first in the pulmonary circulation, as pulmonary edema with cyanosis, often acute, and later in the systemic circuit with engorged liver and cervical veins, and peripheral edema.

Peripheral arteriosclerosis is common but not constant in cardiovascular syphilis, having been found in about half of the cases reported here.

The *association of syphilis of the central nervous system* with cardiovascular syphilis has always been an interesting problem. Such association is occasionally but not usually found. In the literature it has been variously reported, for example 4 up to 38 per cent (an average of about 20 per cent) of central nerve syphilis cases have been said to have cardiovascular syphilis while 16 to 20 per cent of patients with cardiovascular syphilis have been diagnosed as having tabes dorsalis, general paresis, or other form of neurosyphilis. Suggestive evidence of syphilis of the central nervous system was present in about one third of the Massachusetts General Hospital necropsy cases but such evidence helped to lead the clinician astray in three of the seven cases diagnosed aortic lues that did not show the condition postmortem.

LABORATORY DATA

We come finally to the value of laboratory methods in the diagnosis of cardiovascular lues. Nothing is to be gained from routine urine and blood examinations or from electrocardiography. The only help comes from the Wassermann reaction and from x-ray study.

The *Wassermann or allied reactions*, like the Hinton, are usually strongly positive in cardiovascular syphilis. Various figures of positivity are given in the literature ranging from 50 per cent up to 90 per cent or a bit more. In the Massachusetts General Hospital autopsy series of 50 cases we have records of 42 who had tests made of Wassermann or Hinton reactions; 33 of these cases or 78.6 per cent showed positive reactions. Thus a positive reaction is helpful corroborative evidence, but a negative reaction does not rule out aortic syphilis. And indeed a positive reaction may lead one astray; a wrong diagnosis of syphilitic aortitis was made largely because of positive Wassermann reactions in four cases of our hospital series who proved at autopsy not to have the disease. Two of these cases happened to be Negroes.

The final word in the diagnosis of cardiovascular syphilis has sometimes been claimed by the *roentgenologist*. The claim is justified in a few cases where a saccular aneurysm is shown by x-ray alone or where there is excessive diffuse enlargement of the aorta with particular prominence of the ascending portion and flattening of the knob of the arch; but with only moderate or slight or no aortic dilatation such as occurs in a large majority of cases of aortic lues the x-ray is of little or no help. Furthermore the aorta is often most affected in its very first portion just above the aortic valve, and this part of the aorta cannot be visualized in any position by the roentgenologist. Thus, though we should by all means use the x-ray routinely in the study of our cardiovascular cases, we must not expect too much from it and we must be especially careful not to attempt to read too much into the x-ray picture, thereby perhaps casting the shadow not only of a bad prognosis in diagnosing luetic aortitis when it isn't there, but also of a false accusation of syphilis, and of a tedious régime of unnecessary antiluetic therapy. When in doubt it may be justifiable to give potassium iodide, but it is well to be reasonably sure before applying the label of syphilis and outlining courses of therapy for years to come.

In conclusion, it is evident from what I have said that the diagnosis of cardiovascular syphilis is easy in some cases, difficult in many, and impossible in at least a few. The only pathognomonic evidence is that of aneurysmal dilatation of the aorta, saccular or diffuse, but since such cases make up but a small percentage of the total, it is necessary to gather together all the scraps of evidence, large and small, and to weigh them with great care. Fortunately in some cases slight aortic lues, whether diagnosed or not, plays no important rôle, producing neither symptoms nor signs and responsible for neither disability nor death. This may offset, a little, the fact that in such cases clinical diagnosis of the condition is virtually impossible, but it should not lull us into an unjustified feeling of security or cause us to be careless in the accumulation or analysis of evidence in any case, for the earlier the diagnosis, the more helpful is the treatment.

THE TREATMENT OF SYPHILITIC CARDIOVASCULAR DISEASE*

BY C. MORTON SMITH, M.D.†

Mr. Chairman, Ladies and Gentlemen:

I AM honored in being asked to meet with you this afternoon, and to join in the consideration of cardiovascular syphilis.

At present there is no known method of producing an immunity, or of prophylaxis against an infection of syphilis. Education, social hygiene, and the use of venereal prophylactics may decrease the incidence of venereal infections, but they are of little if any value in guarding against innocent extragenital inoculations. An unrecognized chancre of the lip, for instance, may start a small epidemic of syphilis among those in the home, at work or at play. Schamberg reported an instance in which seven young women were infected, through kissing a young man with chancre of the lip, at a party at which kissing games were played. A young man also was infected by kissing a girl who had just been kissed at this same party.

Extragenital syphilis is of especial importance because so frequently unsuspected by the victim and friends, and often by the physician as well, during the most infectious period of the disease.

If venereal syphilis could be entirely eliminated, extragenital inoculations would still continue to furnish a few cases of cardiovascular disease.

There are many patients in whom various late manifestations are unsuspected because of the eminent respectability, or the social position, gained or retained by the individual during the two or three decades since infection occurred. Therefore the individual may be deprived of the benefit of proper treatment when it could be of great service. The diagnosis of syphilis is not usually difficult provided the *possibility* of such a condition is borne in mind.

It appears to be the consensus that the incidence of cardiovascular syphilis at the present time is very much less frequent than it was twenty years ago. Can this be attributed entirely to the modern treatment of syphilis, which covers about this period?

It seems well established that the foundation of syphilitic aortitis is probably laid by the aortic invasion of spirochetes, taking place in the early months, or possibly weeks, of a luetic infection, although the clinical evidence of such invasion may remain hidden for months or years. Brooks reported two instances in which inflammation of the aorta was found at autopsy *before* the appearance of secondary manifestations on the skin. In one case the death of the patient (a young man) was caused by an accident; in the other, by a syphilitic perforation of the aorta just above the valve. Osler noted an aneurysm of one coronary artery eighteen months after the chancre. It is impossible to detect such early appearances by clinical, x-ray, or other examination. In view of this early involvement, it is obvious that treatment, to be effective in preventing cardiovascular damage, must be given as soon as possible after infection occurs, and must be carried on persistently until complete eradication of the disease has been accomplished. This means prompt recognition of all luetic infections (genital and extragenital), and years, rather than months, of treatment or observation as the case may be. I do not recall having seen a patient in whom damage of any kind resulted from long-continued, well-directed anti-syphilitic treatment.

Even with the value of early efficient treatment generally known, it will be a long time before all cases of early syphilis will be promptly recognized and thoroughly treated. This is not necessarily a reflection on the medical profession, for the patient delays seeking medical advice, and the early syphilitic is usually an ambulatory and not a ward patient; hence there are many factors entirely beyond the control of the physician, such as personal and economic, which will interfere with regular schedules of treatment for the necessary length of time. Therefore early signs of cardiovascular damage must be constantly kept in mind, but treatment of this condition should rest on a proved diagnostic basis if possible.

With a positive blood test as a nucleus, the physician should surround it with as strong a structure of historical, clinical, and roentgenological facts as can be obtained. As the majority of these cardiovascular indications occur more often in the fourth, fifth or sixth decade of life, (the second to fourth decades of the disease), pathology from other causes must be noted, and allowance made when laying out the course of treatment to be followed.

It must be remembered that our objective in this late group has changed from that in early syphilis, where our goal is complete sterilization of our patient, accomplished as promptly as possible; here we aim to treat the patient in such a manner as to enable him to live out his expectancy of life as healthfully, happily, and comfortably as possible. If, as the result of our treatment, his blood reactions become negative, so much the better; but I believe it a mistake to

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make a negative blood our principal objective. Clinical and physical improvement cannot be measured entirely by present laboratory tests. One often sees great physical improvement in cases in which the serology remains practically unchanged.

The value of a careful history should be emphasized as well as a thorough clinical examination, and verification of the findings by x-ray and electrocardiogram when possible. We should not be misled by the occurrence of negative blood tests. If the history and clinical findings indicate an antecedent syphilis, the patient should be treated on the positive evidence at hand, and from time to time the blood test should be repeated. The patient should have the benefit of a therapeutic test. One often sees a marked improvement follow treatment in cases where it is not possible to obtain a positive blood test or a history of infection.

We sometimes feel that staying the progress of the disease is all that can be expected from treatment in these later stages; and we have no hope of reducing the diameter of a dilated aorta. This is, generally speaking, true. Here, however, is a striking exception. The case was one of congenital syphilis; the patient a young woman of twenty years. She had been x-rayed by Dr. Morrison shortly before she came to my office, and he had found one of the thinnest-walled aneurysms he had ever seen. This was in August, 1928. The patient received intramuscular injections of bismuth and gray oil, and potassium iodide by mouth. I saw her again six months later; in the meantime two x-ray examinations had been made, each showing definite improvement and a decrease in the size of the aneurysm. There was no pulsation. Seven months later the patient had resumed her vocal lessons, and said that she was "doing everything that she usually did." She continued to improve on the remedies mentioned. She has had no arsenic.

Dr. L. B. Morrison's report is as follows:

I saw Miss E. S. and made a fluoroscopic observation and took plates of the chest with a seven foot plate of the heart on August 10, 1928. When I fluoroscoped her she had what I believed to be an aneurysm just below the arch on the descending portion of the aorta. It was definitely expansive and transmitted the thrill to the chest wall. The wall of the aneurysmal area seemed paper thin; at each pulsation I expected it might rupture. A seven foot plate of the heart taken at this time shows the apex of the heart just back of the bottom of the fourth interspace anteriorly, 7.5 cm. to the left of the median line. The right border of the heart is 3.4 cm. to the right of the median line. Long diameter of the heart 14.4 cm. Diameter at base 9 cm. Diameter across the arch and aneurysm 9.5 cm. The total width of the chest on a level with the apex of the heart 23 cm. The lungs showed nothing abnormal.

On October 9, 1928, following your treatment the diameter of the aorta was 1½ cm. smaller, and its outline was smooth and uniform. Pulsation as seen in the fluoroscope was deeper. The walls seemed thicker than previously. The diameter of the great vessels at this time was 8 cm. through the aneurysmal mass and the patient told me at this time that she had absolutely no pain, and felt like a different person.

On June 12, 1929, there was a definite diminution in the size of the mass; it was approximately 2½ cm. smaller than in the earliest plate. There was a marked improvement in the pulsation, and no pulsation could be felt on the chest wall.

Observations have been made at intervals since, and the change has been less pulsation over this area, as observed by the fluoroscope, and more and more normal appearance.

On March 8, 1932, the fluoroscopic observation and seven foot plate shows the apex opposite the fifth rib anteriorly, 8.2 cm. to the left of the median line. The right border of the heart is 3.8 cm. to the right of the median line. Long diameter of the heart 12.7 cm. Diameter at base 7.8 cm. Diameter of great vessels 6.2 cm. The total width of the chest on a level with the apex of the heart 24 cm.

The patient is in excellent flesh. There seems to be a definite diminution in the size of the aorta. The heart is just slightly increased in size in the measurements. The patient is free from all symptoms. The first picture under the fluoroscope was very striking, and the last observation showed nothing remarkable from the normal appearance that one observes.

This case was unusual in that the patient had congenital and not acquired syphilis, as cardiovascular changes are supposed to be found less frequently in congenital syphilis.

Our remedies are essentially the same in the treatment of cardiovascular as in the treatment of early syphilis—only in the one case we are attacking the invading spirochetes; in the other, the spirochetes and the changes they have produced.

Arsphenamine may occasionally cause untoward reactions in late as in early syphilis; but a Herxheimer reaction in a case of cardiovascular disease may be far more serious. It is especially important to avoid a "therapeutic shock" in cardiac syphilis, and this is best accomplished by first using the slower-acting potassium iodide and mercury, or bismuth and iodide, before giving the more rapid acting arsphenamines.

Potassium iodide should be given in practically all these cases, using increasing doses until the maximum of 60 gr. or more three times a day, has been reached.

In the use of arsphenamine, full doses, frequently repeated, destroy the spirochetes, rather than build up tissue or body resistance; whereas smaller doses, less frequently given, increase the body defense. This defense mechanism plays an important part in late as well as early syphilis, and should always be kept in mind and fully utilized.

Mercury and the iodides are still of great therapeutic value, the latter as an active agent in absorbing the results of syphilitic infection like gummata, atheromatous changes, etc. Mercury

may still be classed as a spirocheticide less rapid in action than arsphenamine or bismuth, and for that reason more valuable in vascular changes where a too speedy action may lead to a weakened condition of the vessel wall, and resulting dilatation. Absorption in these cases should be but little faster than the process of repair.

The danger in giving arsphenamine without first preparing the cardiovascular patient by a course of mercury or bismuth, is that it may cause edema or swelling about or around the orifices of the coronary vessels, or in the coronaries themselves—an edema that may result in sudden death.

After a preparatory treatment, it is well to begin with small doses of arsphenamine, gradually increasing the size of the dose, and continuing for as long a time as indicated—seldom, if ever, reaching a full dose. The initial dose should be 0.05 gm. to 0.1 gm., and should be increased with care. I think that many cases of aortitis and aneurysm show a marked clinical response to arsphenamine when the drug is properly used.

It is quite generally believed now that the therapeutic value of arsphenamine may be increased, particularly in early cases, by giving one of the heavy metals, mercury or bismuth, at the same time. This combination is perhaps safer in early than in late cases.

In Bismarsen we have bismuth and arsenic combined in a single dose for intramuscular use. It apparently has demonstrated its value, especially in late resistant cases; but it sometimes causes considerable pain and soreness at the site of injection, in spite of proper technic. This preparation should be of especial value in the treatment of cardiovascular syphilis on account of the slight danger of Herxheimer reactions, or therapeutic shock, and also on account of the combined spirocheticidal and resistance-building action. In using this preparation a preliminary course of mercury is unnecessary.

Increased experience in the use of bismuth leads me to place great confidence in this drug in treating late and latent, as well as early cases. It is more active than mercury, and less rapid than arsphenamine, and much less likely to produce untoward results. With care it may be used over long periods. It may cause a bluish-purple color of the gums, which may be looked upon as an early sign of saturation, and as an indication for omission or the less intensive use of the drug or replacing it for a time with mercury. In my opinion bismuth should not supplant arsphenamine in the treatment of early infections, but it is a very valuable supplement, and its spirocheticidal and resistance-building properties make it of especial value in treating the conditions under consideration.

In giving bismuth I have preferred to use ampoules rather than bulk packages of the insoluble salts which are suspended in oil, owing to the difficulty of assurance of accurate dosage. In some preparations, thorough shaking, even after warming, will not give a uniform suspension. Cole found in certain preparations as wide a variation in bismuth as content 10% to 90%, according to whether the dose came from the top or the bottom of the bottle!

I have not used bismuth intravenously.

I believe that arsphenamine is superior to neoarsphenamine in the treatment of luetic infections; but the more complicated technic of preparation, and the greater possibility of immediate reactions, are handicaps to its general use outside of clinics. The diminished efficiency of neoarsphenamine is overcome by the number of treatments and by dosage.

Sodium arsphenamine and sulpharsphenamine are, I believe, decidedly weaker therapeutic agents than neoarsphenamine, also sulpharsphenamine is considered more liable to produce arsenical dermatitis and purpuric eruptions than the other preparations of this group.

Hypertension in itself is not regarded as a contraindication to arsphenamine therapy, which is better borne than mercury, particularly if there is any considerable evidence of renal involvement. Treatment has little, if any, effect, in my experience, in reducing blood pressure in these cases with a positive Wassermann.

As in all other phases of syphilis, an early recognition of an aneurysm is the basis of the best response to treatment. However, even well-advanced cases, in my opinion, have a better chance of life and comfort from treatment than is usually supposed, unless serious changes have already taken place in the heart muscle or coronary arteries.

Treatment in aneurysm should always begin with iodide and mercury, followed by bismuth in place of the mercury. When the danger of too rapid absorption, and of consequent weakening of the vessel wall has probably passed, then small doses of neoarsphenamine may be given, and the dose should be carefully increased and continued at intervals for a considerable period. Mercury or bismuth may be given between the courses of neoarsphenamine. Many patients have been greatly helped by this method of treatment, not alone in relief of distressing symptoms, but in the prolongation of life.

Potassium iodide should always be given, unless an idiosyncrasy or gastric irritation contraindicates its use. Often the addition of mercury in doses suited to the case is of definite benefit. Bromide of potash is of real value in relieving nervousness and apprehension; by giving the major dose in the evening, a night's rest is often assured, if insomnia is present. The temporary relief afforded by nitroglycerine, and the like, is often valuable, in addition to the remedies aimed at the cause of trouble.

Rest and the avoidance of all extremes—over-

excitement, overwork, overeating, etc.—should receive careful attention. Considerable physical or mental work may be allowed, provided there is no sudden overdoing. Worry and mental strain should be eliminated so far as possible, and this includes the thought of syphilis and the knowledge that something is wrong with the vital organs. I believe that unwarranted optimism in stating the prognosis to the patient is usually justifiable. The real condition should be told to some reliable member of the family. Drugs that are useful in relieving cardiovascular distress in non-luetics have the same value here.

Unless the patient is definitely underweight, the diet should be such as to avoid overweight. If the patient is obese, care must be exercised to guard against a too rapid loss. If eating produces distress from distention, less food at more frequent intervals should be tried, and remedies to relieve gastric distress should be prescribed. Refractory cases of angina pectoris may raise the question of sympathectomy.

Occupational therapy may be a real help to many cardiac patients. Most people are interested in doing things with their hands. Such work maintains a diverting interest and lessens introspection and the feeling of utter uselessness and hopelessness. The individual should be allowed his usual routine of living, so far as is possible within the bounds of safety.

TO SUMMARIZE

The best treatment of cardiovascular syphilis is the thorough treatment of early syphilis. Our most active spirocheticides are the arsphenamines, bismuth and mercury, in the order given. Potassium iodide still holds its place as an active agent in absorbing the products of syphilitic inflammation, and is a valuable supplement to arsphenamine, mercury and bismuth. Intravenous use of bismuth has not seemed desirable to me, and others concur in this opinion. All of nature's beneficial therapeutic measures—in the way of rest, sleep, good food—should be utilized.

In the treatment of cardiovascular syphilis there is ample opportunity for the practice of both the Art and the Science of medicine, and the larger the amount of each, the better for the patient.

DISCUSSION OF SYPHILITIC HEART DISEASE

BY SAMUEL A. LEVINE, M.D.*

We have just listened to an extremely thorough discussion of the pathology, clinical features and treatment of syphilitic heart disease. In the short time I want to take, I merely wish to emphasize a few points that have already been made and possibly mention a point or two which, as a result of my own experience, I believe may be helpful. It is clear that some cases of luetic aortitis cannot be recognized clinically, although in most cases the diagnosis can be definitely made or at least suspected. If we find definite evidence of aortic aneurysm by physical examination or by x-ray, that makes the diagnosis. Many such cases give no physical signs and will only be found by routine x-ray examination. The five points to be borne in mind that should direct attention to the possibility of luetic heart disease are aneurysm of the aorta, aortic insufficiency, a positive Wassermann, a past history of syphilis, and other stigmata of syphilis such as Argyll-Robertson pupils and spinal fluid findings. In about 10 per cent of proved cases of luetic aortitis, all these points will be lacking. These are the cases that are most difficult to diagnose.

Apart from the points already mentioned by Dr. White I wish to call attention to the finding of a localized systolic pulsation or impact which can be seen and felt at the base of the heart, generally in the second right interspace. Although this may occasionally occur in other conditions, it prompts one to search for an aneurysm. About 30 per cent of proved cases of luetic aortitis will have a negative Wassermann reaction. It must be borne in mind that a negative Wassermann therefore does not rule out the diagnosis, nor does a positive reaction necessarily mean luetic aortitis. A patient may have an incidental positive Wassermann and really be suffering from the ordinary type of coronary artery disease or rheumatic heart disease.

We must auscultate the heart with great care, for some of the diastolic murmurs of luetic aortic insufficiency are extremely faint. I have frequently been able to make the proper diagnosis in cases that have previously been overlooked, by listening at the third left interspace with great care, having the patient lean forward a bit, holding a deep expiration. In this way the heart is in closer proximity to the chest wall. We must deliberately listen for such a murmur, otherwise it will be overlooked.

In trying to differentiate rheumatic from luetic heart disease, finding evidence of stenosis of one of the valves is of great help in identifying the etiology as rheumatic. I have never seen a case of stenosis of either the mitral or aortic valves that I believe to be syphilitic. Here again careful physical examination is important. Detecting a true systolic thrill at the base of the heart, when congenital heart disease can be ruled out, I believe always means aortic stenosis, and therefore a non-luetic process. I have never felt a true thrill and by this I mean a real purr which has an appreciable duration, in aneurysm or dilatation of the aorta. On the other hand, luetic and rheumatic heart disease may both exist in the same patient and such diagnoses I have made and subsequently confirmed. The past history of luetic or rheu-

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matic infection, the detection of stenosis of one of the valves, the presence of auricular fibrillation, which is common in rheumatic and very rare in luetic heart disease, the Wassermann reaction, and the x-ray findings in the aorta, are all points that help in this problem.

I wish to mention the rarity of syphilis as a cause of angina pectoris. More than ten years ago in a study of angina pectoris, I found that only 4 per cent of patients were syphilitic. Diabetes on the other hand, is much more important as a predisposing factor. This I believe to be true, notwithstanding the old teachings of the past generation that syphilis is of primary importance. Furthermore, when we make a diagnosis of angina pectoris in a patient who has syphilis, it does not follow that the two are related. I do not believe that syphilis has much to do with coronary artery sclerosis or thrombosis. Syphilis may very rarely cause anginal symptoms, by producing marked aortic insufficiency with a low diastolic pressure, or by narrowing the mouths of the coronary arteries. Here the luetic process in the aorta merely extends down to the base of the aorta, where the coronary arteries begin. In these cases we may have symptoms of coronary artery disease as a result of anoxemia of the heart, although the coronary arteries beyond the orifices are essentially normal. It is very rare that syphilis is a factor in disease of the heart muscle except indirectly by the above process. In other words, although syphilitic myocarditis, either diffuse or in the form of localized gummata, exists, it is extremely rare. Furthermore, when a syphilitic has angina, I believe the angina is often due to the ordinary factors present in non-syphilities and the syphilis may not be producing any important vascular changes or causing an independent disease in the aorta.

There is another important differentiation to which I wish to call attention, i.e., the distinction between luetic aortitis and angina pectoris. I do not believe that syphilitic disease of the aorta of itself produces angina pectoris. The pain is quite different in the two conditions. I have several times seen patients diagnosed as angina by competent physicians, where I felt quite sure from the history alone that angina was not present. Although sure of this, I might not be certain as to the real cause of the pain. The possibility of aneurysm or tumor of the mediastinum, lung or spinal cord would come up. Careful study showed that syphilitic aortitis with aneurysm was the cause of the pain. As further evidence that syphilitic disease of the aorta of itself does not produce angina, it must be recalled that the former is very common in Negroes, while angina is very rare. The proper understanding of the types of chest pain will aid materially in distinguishing these two conditions.

In closing I would like to say one word about treatment. I know of no evidence either from my own experience or from that of others which proves that anti-luetic treatment helps congestive heart failure in syphilitic heart disease. Mercury, potassium iodide, and arsenic may help aortic pain or an aneurysm of the aorta, but when peripheral congestive symptoms develop, we must use the same methods of treatment that are employed in non-syphilitic heart disease. In fact there are cases in which intravenous arsenic may be harmful and very dangerous. I know of two luetic patients with angina pectoris who died instantly after an intravenous injection of salvarsan. The risk of an occasional fatality would be warranted, if the treatment offered considerable value in the non-fatal cases. I am of the opinion, however, that when there is angina pectoris or coronary artery disease, mercury, potassium iodide, and intramuscular bismuth should be used and intravenous medication employed, if at all, only in very small doses and with great caution. This does not apply to disease of the aorta. As an illustration of this point of view, I may cite an experience with a young man 38 years old, who had a severe attack of coronary thrombosis eight years ago. He had a chancre at the age of 20 and showed a positive Wassermann reaction. He made a splendid recovery on ordinary treatment, receiving no antisyphilitic treatment during the acute coronary thrombosis, and taking mercury and potassium iodide subsequently. He has been well and working all these years, still has a positive Wassermann and has never had any arsenicals.

NEW ENGLAND SURGICAL SOCIETY

CONTRACTIONS OF THE NECK FOLLOWING BURNS*

BY CHARLES G. MIXTER, M.D.†

SEVERE contractions of the neck following burns are not uncommonly seen in children. The deformity is extremely disfiguring and if untreated may cause retardation of growth and development of the mandible and distortion of the bones of the face. The chin is anchored to the chest in the vicinity of the sternoclavicular junction and the lower lip is drawn downward and outward. To release the chin, the scar both superficial and deep must be widely excised and the defect remaining is of enormous size. As the cosmetic result is of nearly as great importance as the functional, the problem of the best method to close this large defect is a serious one. It is not the intention in this brief communication to present any new principle of plastic surgery, but to outline a procedure that has proved satisfactory in our hands in handling this type of deformity, in the hope that it may be of service to others in dealing with this often difficult problem.

Thiersch grafts give so unsightly a final result that their use is contraindicated. If the burn has not involved the skin over the shoulders and upper back, pedicle flaps may be taken from this region either unilaterally or bilaterally, and transposed to close the defect in the anterior aspect of the neck. The great drawback to this procedure is the necessity of scarring the back and producing thereby a disfigurement that is very distasteful, particularly in girls. The use of full thickness Wolff grafts of such large extent is rarely successful and has the further disadvantage of failing to supply the necessary mobility to give the best result, owing to the lack of underlying subcutaneous fat when the cicatrix of the burn is deep.

Full thickness skin with its underlying fat obtained from a distant location yields the best result. This is best obtained low on the lateral chest wall on either or both sides. Hair will be absent from skin flaps taken from this location and so far as one can foresee the vagaries of feminine fashions should not leave unsightly scars visible to the public. In determining the amount of skin to be transferred it should always be borne in mind that the defect to be filled after excision of the scar will be far greater than is anticipated. The transference is accomplished by the tube graft method*, the flap being raised and converted into a tube leaving both ends attached until sufficient circulation has been established from the end to be left attached at the first jump to nourish the tube when the free end is implanted in its new position. This is usually a matter of five or six weeks and may be determined by constricting temporarily the end of the tube to be moved with a rubber band and watching the effect on the circulation of the tube. Another method of assuring sufficient blood supply to nourish the tube is by cutting the end to be moved little by little until entirely freed. If an unusually long tube is desired one or two intermediate bridges of tissue are left in forming the tube to give temporary nourishment. Later when the circulation seems sufficient, these bridges are cut, freeing the tube from end to end. The greatest width of skin from the lateral chest wall, of a child, that can be lifted and still permit approximation of the skin beneath the tube is about three inches. It is well not to have the tube more than three times as long as the width of the flap on account of the danger of ischemic necrosis. Either end of the tube may be moved first, depending on the extent and location of the scarred area. The ultimate position to be attained is either the oblique necklace position or a vertical one with the implanted ends of the tube on the periphery of the scarred area. The tube may, therefore, be moved by freeing the anterior end and moving it over the shoulder to the neck or a route over the front of the chest may be followed. Care must be taken that the tube does not kink during this manoeuvre, as ischemia will cause gangrene of the tube. After the final position of the tube has been attained and sufficient time has elapsed to establish adequate circulation, the scar is excised, the tube is opened, the thin fibrous core is removed, permitting the flap to lie flat, and the flap is cut across and the segments sutured into the defect.

The contour of the chin and the fold of the neck is the most difficult cosmetic effect to obtain. The skin flap should be cut across obliquely in such a manner that the portion with its

*Presented at the Annual Meeting of the New England Surgical Society at Hartford, October 1, 1932.

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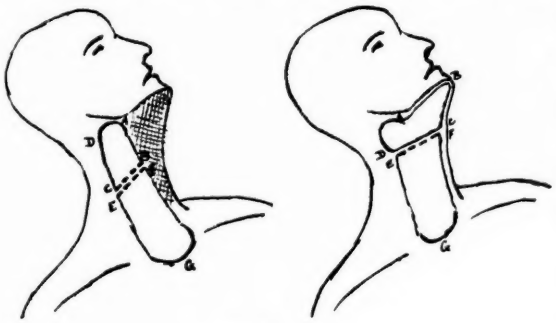
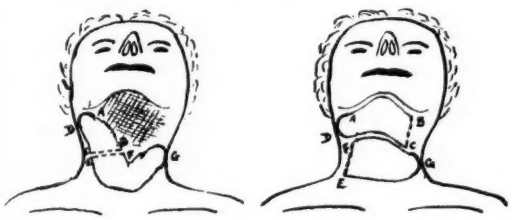
*Priority for the published description of this method was claimed by Filatoff of Odessa in 1916. The method was independently developed and described by Gillies of London in 1917 and to him unquestionably belongs the credit of perfecting and popularizing the technique. (Ivy in Nelson's Loose-Leaf Surgery. Section on Plastic Surgery.)

attachment at the higher level in the neck should fit snugly into the area beneath the chin in a horizontal direction and the other flap should fill the anterior surface of the neck in a vertical or oblique direction. In this way a nearly natural fold can be formed where the edges of the two flaps are sutured together high in the neck. It is important, we believe, to have the upper transverse flap lie accurately in the defect beneath the chin with a tight margin where it joins the neck to assure a proper profile.

The accompanying photographs of three of the cases will be sufficient to show the method of utilizing the tube flap and the final results obtained.



NO. 1.



NO. 2.

(LINE DRAWINGS)

NO. 1. (Left) Tube flap implanted in vertical position has been opened and cut across preparatory to filling defect by excision of scar.

(Right) Defect closed by flaps, the upper rotated to a horizontal position, the lower vertical. The line D-C should fit very snugly to form the superior cervical fold and give the proper contour.

The vertical implantation of the tube gives the most satisfactory result in dealing with relatively narrow midline contractures.

No. 2. (Left) Tube flap implanted in oblique necklace position, opened and cut across. Note that the obliquity of the incision is opposite to that used in cutting across the vertically placed flap.

(Right) The defect is closed by placing the flaps horizontally.

The oblique necklace position of the tube is used to best advantage in the broad short contractures partially encircling the neck.

NO. 1.

NO. 2.

CASE C. H. NO. 93098.

NO. 1 and NO. 2. Contracture following burn. Tube flap has been raised. Note length and diameter of tube.

NO. 3.

NO. 4.

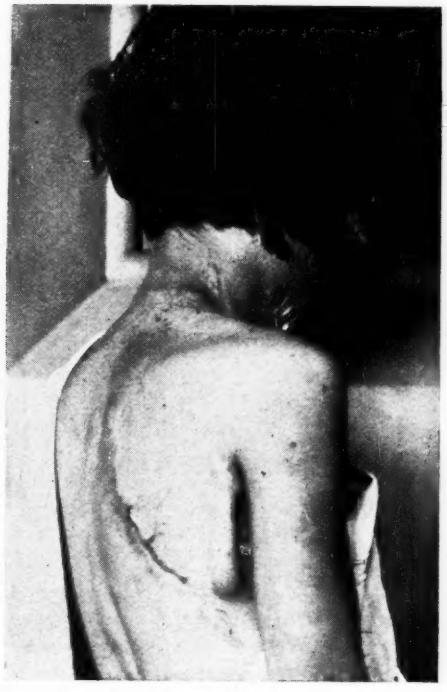
NO. 5.

CASE C. H. NO. 93098.

NO. 3 and NO. 4. Result immediately following removal of sutures. The large extent of the flaps obtained by this method is evident.

NO. 5. Final result several years later.

NO. 1.



NO. 2.

CASE B. I. NO. 10763.

NO. 1. Contracture following burn.

NO. 2. Tube formed at another clinic was too long and thin, ischemic necrosis followed, leaving insufficient tissue in the graft. Also choice of location for forming tube graft is poor as back is scarred. It should have been placed lower on lateral chest wall and more horizontal.

NO. 3.

CASE B. I. NO. 10763.

NO. 3. The short tube was jumped to the waist and thence to neck. It was then opened and inserted in defect left by partial excision of scar. The sutures have just been removed.

NO. 4.

NO. 5.

CASE B. I. NO. 10763.

NO. 4 and NO. 5. Two months later. There is still pull in mid line of neck and contour of submental region is unsatisfactory. Further readjustment of flaps will be necessary. There is a marked keloid tendency.

NO. 1.

NO. 2.

CASE C. H. NO. 43531.

NO. 1. Contracture following burn of neck. Tube flap has been raised from lateral chest wall and implanted in neck over shoulder on margin of cicatrix.

NO. 2. Following transfer to the oblique necklace position, the tube has been opened, cut across obliquely, the scar has been excised and the flaps placed horizontally to close the defect. The sutures have just been removed.

NO. 3.

NO. 4.

CASE C. H. NO. 43531.

NO. 3 and NO. 4. Result several years later. There have been several minor procedures to smooth out the flaps. Note contour of chin and neck.

Discussion

Dr. Horace P. Stevens, Boston, Mass.: *Mr. President and Members*—I must say that when I discovered that my name was down on the program to discuss this paper, I felt a good deal like the old colored cabman who was asked to change the twenty-dollar bill. "I certainly am obliged for the compliment."

As a matter of fact, what little I may know about this subject comes from what I have learned from others rather than from any personal experience, and I may say in passing that that knowledge has been materially increased by hearing Dr. Mixter's paper. I think the subject is one in which we all ought to be interested because it offers what is, comparatively speaking, a simple method of attacking a very difficult and very important problem.

Plastic surgery, it seems to me, depends for success not only on a good deal of ingenuity and a fine nicety of technique, but also on an ability to visualize as the sculptor does, in three dimensions. The plastic surgeon, however, unlike the sculptor, has no extra little bits of clay with which to correct his miscalculations and hence any method that provides, as this does, not only a larger scope in the choice of site for the material, but also a larger amount and better adaptability of that material, is one of great value.

I think I have nothing on this subject constructive that I can offer, unless perhaps it is one thought in regard to dressings. After these flaps are put in place, the matter of tension or rather lack of tension, and immobilization under light, even and steady pressure, is of first importance.

On this latter point I have been impressed lately with the possibilities in the use of the so-called "sterilastic" bandage which has recently been put on the market.

This dressing is adaptable to almost any location that requires the sort of even pressure that is so valuable in this type of work and I think it might be used with great advantage in this particular situation.

Dr. Ernest M. Daland, Boston, Mass.: I have been interested in this subject for several years at the Massachusetts General and I realize the amount of pains and patience required for Dr. Mixter to produce such results.

In some of these severe scars of the neck we have found it is simpler to incise the scar transversely and not attempt to remove it for the time being. The incision is carried through the scar and usually through the platysma, allow-

ing correction of the deformity. We then proceed with the flaps in much the same way that Dr. Mixter has described.

Later on these flaps can be stretched considerably and the scar removed without as much difficulty as in the first place. At the first stage the scar is allowed to retract downward as far as possible, as we feel that the scar tissue is better than nothing, and it allows a quicker result.

DR. DANIEL C. PATTERSON, Bridgeport, Conn.: Mr. President, I should like to ask: What does Dr. Mixter do when there is tremendous keloid formation?

DR. CHARLES G. MIXTER: In answer to the question by Dr. Patterson relative to the formation of keloid, I have encountered the same thing. I believe there are certain cases in which you can do an excision of the scar and then immediately after healing has taken place, start x-ray treatment and sometimes derive benefit. I also feel that occasionally there is apparently a greater keloid tendency at one time than at another and less keloid may form, say a year or two years after the primary operation than immediately following it.

I think the virtue of the procedure that I have outlined is that you can get a large amount of tissue to fill a defect in a simple way, with less scarring to cause an unsightly defect than you can in any other method that I know of.

DERMATITIS FROM RUBBER GLOVES

BY JOHN G. DOWNING, M.D.*

IN these days of aseptic surgery, the use of rubber gloves is so essential that the utmost care in their manufacture is necessary, for any disturbance in the skin of a surgeon prevents him from scrubbing and, therefore, lessens his chances of having thorough asepsis. Occasionally cases of dermatitis are seen among surgeons. In the past six months I have had occasion to see two such cases. In view of this fact, and also because I have been unable to find any cases in literature where rubber gloves were definitely proved to be a cause of dermatitis of the hands, I am reporting the following cases:

On January 14, 1932, A. H. S., a lineman employed by one of the public utilities companies, complained of itching and swelling of his hands. The condition began two weeks previously with a few red pimples on the skin, between the fingers of both hands. He used a solution to relieve the itching, and then, after wearing rubber gloves all day, his hands began to swell.

On investigation, it was found that in this work the men wear rubber gloves practically all day; in fact, it is a rule of the company that no man should climb a pole without having his hands protected by rubber gloves. The men are instructed to first put on a pair of white cotton gloves, and then the rubber gloves over these. The rubber gloves are made of a heavy material and extend about six inches above the wrists. Over these gloves are worn leather casings, or heavy leather gloves. It was noted that the cotton gloves, after being washed, generally shrank considerably and did not extend beyond the upper part of the palmar surface, so that the rubber came in direct contact with the anterior surface of the wrist.

Both hands were considerably swollen and there were many fine vesicles scattered throughout. The dermatitis was most marked on the dorsum of the hands. This case was considered to be a combination of a slight hypersensitivity and the use of an external irritant.

On February 24, 1932, however, two men, doing the same work but in a different district, reported. The first man gave a history of having had a dermatitis in August, 1931, exactly the same as that from which he was suffering at this time. Just previous to that attack he wore a pair of chocolate-colored gloves for the first time. At that time his condition was diagnosed as poison oak dermatitis and it quieted down in a short time. From then until two weeks ago, he had worn a different type of rubber glove and had no disturbance. Two weeks ago he was again given a pair of chocolate-colored gloves, and several days later his hands began to itch and burn and he had a recurrence of the condition from which he had suffered in August.

On March 4, 1932, another lineman working in an entirely different district from the previous cases, reported, stating that on February 25 he was given a new pair of chocolate-colored gloves which he wore for three days. Then his wrist became very itchy.

These three cases all presented the same type of eruption. The condition was most marked on the anterior surface of the wrists, where the rubber came in direct contact with the skin, and consisted of marked redness with numerous fine papules and vesicles scattered throughout. From this area, the redness shaded and became less marked, involving the backs of the hands to a slight degree.

The men have all worked for this company for years, wearing rubber gloves, sometimes for eight hours a day. Up to the present time, with the exception of one of them, they have never had any disturbance of their skin.

On March 14, 1932, a man who had worked for the above company for twenty-eight years and whose work now consists of emergency work, stated that he had not worn a pair of rubber gloves for a month. A week before he tried on his bare hands a pair which were very tight. He kept them on only about five minutes. The following day both hands began to itch and burn, and by night they were swollen considerably. He presented marked redness and swelling, with numerous vesicles on the dorsum of both hands. This case, like the first one, showed marked reaction which, in my opinion,

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was due to marked susceptibility to the offending agent.

Further investigation revealed the fact that a short time before, namely on November 19, 1931, and January 30, 1932, two cases of dermatitis in men doing the same type of work and wearing the same brand of gloves, were treated for a dermatitis, the description of which was similar to case two.

It was now felt that there was a definite relationship between the rubber gloves and these dermatoses. A patch test was performed on three different persons. The medical director of the company applied a square inch of the chocolate-colored rubber gloves to the dorsum of his shaved wrist. He wore this for twenty-four hours and showed marked reaction. He later applied pieces of cellophane and two other types of rubber gloves. He found absolutely no reaction after wearing them for twenty-four hours. Further investigation showed that, although the company purchases gloves from several different firms, the chocolate-colored gloves, which were thought to be the cause, were all purchased from the same rubber company.

The safety engineer also applied a piece of the rubber glove to his arm and had a marked reaction. It was also applied to the forearm of patient number four and worn for twenty-four hours. At the end of twenty-four hours no reaction appeared, but at the end of seventy-two hours, there was a marked reaction with intense itching. This reaction persisted longer than the original dermatitis, lasting almost three weeks.

The delayed reaction is interesting. Its importance is illlustrated by the standardized patch test for rubber which was developed by Dr. S. H. Katz of the Edgewood Arsenal, working in coöperation with the United States Public Health Service. A letter from the commanding officer of the Edgewood Arsenal gives the United States standardized patch test as follows:

> "U. S. Army Specification 20-75A, Face Blank, Face Piece, Gas Mask, includes a test for toxicity of the rubber. In amplification of the test method; this test is made by applying a piece of the rubber one inch square to the inner arm of each subject, about 3 inches below the axilla for 24 hours. Sometimes the application has been extended to 72 hours. The test piece is held with adhesive tape and covered with a cloth bandage which is moistened from time to time to simulate perspiration.
>
> "It is found advisable to examine the site of the application over a period of three weeks because in some cases the appearances of physiological effects have been delayed."

It was, therefore, definitely proved that all these cases of dermatitis arose from the same cause; that is, rubber gloves manufactured by one rubber company. This company admitted the claim, and this brand of gloves was removed from use. Since then, there has been no case of dermatitis.

Letters were sent to various rubber companies to determine whether they knew of other cases of dermatitis resulting from rubber gloves. All replied negatively, with the exception of one company, whose chief chemist made the following statement:

> "In the last twenty years we have had reports of perhaps twenty cases of dermatitis caused from rubber gloves. There has probably been a considerable number of cases of which we had no complaint. This experience is about the same as we have had in other lines of rubber goods in which the rubber was used in direct contact with the skin. As might be expected, there seems to be no one particular substance in the rubber to account for every case. We do know, however, that some individuals are so hypersensitive that they will get a marked reaction from the protein materials in the rubber as it comes direct from the tree. With other individuals there is no reaction except with certain of the vulcanizing agents used in the manufacturing processes. We have found in some cases that persons who showed a marked reaction to rubber vulcanized by the acid process would not be affected by rubber vulcanized by the heat process, and conversely, we have found individuals who could use no rubber except that made by the acid process.
>
> "We have done considerable work on this subject, having in our own organization one individual who is highly hypersensitive. However, our conclusions amount to very little because of the apparent wide variation in the quality and degree of hypersensitivity in various individuals."

It has been known for a long time that contact with rubber will produce a dermatitis, especially in manufacturers, and considerable study has been made to eliminate possible irritants. Research has found that these various substances used in rubber manufacture can be classified as follows:

Highly Toxic or Irritant

Aniline
Hexamethyline-tetramine
Ortho-toluidine
Para-Phenylinediamine
Para-toluidine

Slightly Toxic or Irritant

Alpha-naphthylamine
Beta
Methyline aniline

No Hazards with Proper Handling

Aldehydeammonia
Diortho-tolyl-thiourea
Heptaldehydeaniline
Methyline diphenyl diamine
Thiocarbanilide

No Hazards

Dimethylammonium-dimethyl-dithiocarbonate
Diortho-tolyl-guanidine
Diphenyl-guanidine
Ethylidine aniline
Mercapto-benzo-thiozole (Captax)
Piperidonium penta methyline dithiocarbonate

While this list is not a complete one, it contains most of the ordinary accelerators used.

SUMMARY

1. Seven cases of dermatitis due to a particular type of rubber glove are reported.
2. The same type of dermatitis was reproduced in two controls and in one of the patients by application of the rubber to the skin.
3. The irritants involved in the manufacture of rubber are described briefly.

MEDICAL PROGRESS

PROGRESS IN NEUROLOGY

BY ABRAHAM MYERSON, M.D.,* AND JULIUS LOMAN, M.D.*

THE CEREBRAL CIRCULATION

ONE of the most gratifying advances in the domain of neurology in the past few years has been the accumulating evidence that the cerebral vessels possess an active vasomotor mechanism. For many years it has been held to be very doubtful that such nerves exist; in fact, many physiologists believed that the cerebral circulation is regulated entirely by the general and splanchnic vasomotor systems.

As a result of the anatomical studies of Gulland[1], Huber[2], and Stöhr[3], nerve fibres have been demonstrated on the arteries, veins, and capillaries of the pia and in the choroid plexus of the ventricles. This anatomical evidence has been corroborated by the work of Forbes, Wolff, Cobb and Lennox[5] in very carefully controlled physiological experiments on the brains of animals. The pial vessels were observed to respond very actively to such conditions as stimulation of the vagus and the cervical sympathetic nerves and to the direct application of drugs. More recently, Wilder Penfield[6] reports that not only do the pial vessels possess such nerves, but he has succeeded in staining nerve fibres on the intracerebral vessels throughout the central nervous system. He has not succeeded, however, in staining nerves on the intracerebral capillaries, but, as he states, this does not, of course, prove that they do not exist.

Such anatomical and physiological observations should aid neurologists to speak more definitely concerning such phenomena as cerebral angiospasm, and may help in explaining the mechanism of posttraumatic syndromes and headaches of other types.

In his anatomical studies of the brain, Stanley Cobb[7] has not been able to discover any end arteries in that organ. This necessarily upsets Cohnheim's theory of cerebral infarct formation resulting from occlusion of an end artery. Cobb offers the interesting observation that due to lack of oxygen, immediate chemical changes in the brain, as in other organs, take place. The effects of oxygen want in the brain are edema, dilatation of the blood vessels, diapedesis of red cells, and finally, necrosis. This chain of events occurs quickly at the centre of the anoxemic area. At the periphery of this focus is a belt of less marked chemical alterations, and this merges into the normal tissue around it.

Cobb points out that the ganglion cells suffer very quickly from even partial anoxemia, and a greatly reduced blood supply results in necrosis of these cells, and finally leads to what is called "ischemic" or "anemic" infarct.

Even in the presence of arterial and capillary anastomosis, occlusion of an artery may produce necrosis, for, states Cobb, it is a matter of relative anoxemia in a tissue more dependent on its oxygen supply than any other tissue in the body.

The present authors[8] have utilized the internal jugular puncture of Myerson and Halloran[9] and have combined it with the carotid and lumbar punctures in an attempt to demonstrate the dynamic phenomena occurring within the intracranio-vertebral cavity in man. It was found that the experimental results in human subjects coincided, in most instances, with those obtained on animals; that the reactions occurring in the internal jugular vein closely paralleled those in the cerebral venous sinuses in animals.

Thus, it was demonstrated that the pressure in the internal jugular vein, with the patient lying in the horizontal position, is slightly lower than that of the cerebrospinal fluid; that compression of the vein resulted in almost equal quantitative increases in both the venous and cerebrospinal fluid pressures, allowing the mechanism of the Queckenstedt phenomenon to be more directly visualized; that various acts, such as coughing, loud talking, straining and abdominal compression increase the two pressures in almost equal degree. Very important from a practical point of view is the simultaneous rise, during such efforts, in the carotid pressure. The clinical significance of such a phenomenon is readily appreciated, when it is recalled that cerebral hemorrhage not uncommonly follows such violent acts as straining at

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stool and passionate oratory in arteriosclerotic individuals.

The effect of changes in posture on the three intracranial fluid components was also observed. Gravity, it was demonstrated, exerts a definite effect upon the cerebral-venous and cerebrospinal fluid pressures. On the other hand, the arterial (carotid) component, although initially responding to the postural alteration, quickly overcomes such influence, due probably to the active constricting power of the cerebral vasomotor fibres in an effort to keep the cerebral circulation regulated.

As a result of these observations in a great number of patients, the authors feel that the technique employed in these experiments offers a safe and clinical approach to the further study of intracranial conditions in both health and disease.

VENTRICULAR AND ENCEPHALOGRAPHY

In a good outline of these helpful methods in the diagnosis of cerebral lesions and in certain cases for therapeutic purposes, Eugene P. Pendergrass[10] points out their respective advantages and disadvantages.

By means of ventriculography (direct injection of air into the ventricles), the ventricles are completely outlined, allowing of localization of brain lesions, such as tumors, abscesses, and ventricular blocks from any cause.

The technical disadvantages of the procedure is the necessity of making two incisions and trephine openings and puncturing the brain twice. The danger of hemorrhage from piercing an occipital lobe tumor must be anticipated, although such a mishap is usually minimized in the hands of experienced surgeons, since they can usually detect the difference between normal brain and tumor tissue. However, should a tumor or hemorrhage be encountered, one could proceed with the operation.

Should a reaction follow the introduction of air into the ventricle, one can either proceed with the operation, if the tumor be localized, or the reaction can be relieved by draining the ventricles with removal of the air. Other disadvantages of ventriculography are occasional failures to find and drain both ventricles and failure to outline the subarachnoid space. Finally, mortality is associated with the procedure.

Encephalography (injection of air by lumbar or cisternal route) is simple to perform and may be used in patients of any age and the mortality is very low. By this technique, both the subarachnoid spaces and ventricular system are outlined, and the brain as a whole is visualized. Thus, one is able to demonstrate lesions on the surface of the brain, such as brain atrophy and arachnoiditis, which ventriculography fails to localize. Again, tumors, abscesses, and degenerative lesions with or without slightly increased intracranial pressure can be diagnosed and localized. Furthermore, by encephalography epileptic patients, undergoing treatment, may be followed. As a therapeutic measure, it is of value in relieving posttraumatic headache.

The disadvantages of encephalography are as follows: First, it causes severe headache, some nausea and occasionally vomiting. Secondly, it is a dangerous procedure in the presence of lesions in the posterior fossa, since it is liable to result in a foraminal hernia. Thirdly, the posterior and inferior horns of the ventricles are poorly outlined because of the difficulty of draining them.

Sometimes both ventriculography and encephalography may be combined in the same patient when differentiating an infratentorial and a supratentorial lesion. A diagnosis between these two lesions is essential, for the neurosurgeon makes an entirely different approach on the one than on the other.

That endolumbar injections of air often relieve posttraumatic headache and dizziness is attested to by Monrad-Krohn[11]. This author tried this method of treatment in nine cases. In two patients there was complete relief of symptoms; two other cases showed great improvement. There was doubtful improvement in another case, and none in three cases. In the last case, the patient claimed to be worse than before the treatment. The author feels that although the procedure is distinctly painful, it should be tried in any case of head injury with severe and long-standing headache, with no apparent tendency to amelioration.

F. L. Reichert[12] cites his experience with endolumbar pneumotherapy in six cases of posttraumatic headache. Four patients were followed from four months to nearly three years after the treatment and remained entirely free of symptoms. One case could not be traced after discharge from the hospital. A recent case was about 80% improved.

ARTERIAL ENCEPHALOGRAPHY

Another useful aid in the diagnosis of brain tumor is this method recently introduced. The technique of arterial encephalography, briefly, is the injection of an iodide solution into the common carotid artery and the taking of immediate encephalograms. The diagnosis of brain tumor is made by visualizing dislocations of the cerebral arterial tree or the accessory circulation of the tumor. By means of their most recent technique, E. Moniz, A. Pinto and A. Lima[13], in about two hundred encephalograms in one hundred patients, have been able to localize eighteen brain tumors by visualizing dislocation of the middle cerebral arterial tree. In fourteen of these cases, the diagnosis was confirmed by operation.

NARCOLEPSY

This fascinating disease has been the subject of thorough study by Harry A. Cave[14] in forty-

five cases. The author describes the condition as characterized by sudden attacks of sleep and cataplexy (a condition in which the muscles suddenly relax and give way as a result of some emotional stimulus).

Cave believes that there is sufficient similarity between narcolepsy and normal sleep to warrant the clinical application of the term "sleeping attack," and the assumption that they may have a common etiological mechanism.

Cave feels that Pavlov's work on conditioned reflexes throws light on many of the characteristics of narcolepsy. Thus, the occurrence of sleep as a result of few or monotonous stimuli reaching the cortex, the transition from sleep to narcolepsy, the varying degrees of intensity of sleep, the ease with which sleep may be dispelled by the application of fresh stimuli, have all been duplicated in Pavlov's dogs, and it seems evident that narcolepsy is due to inhibition. The mechanism by which this inhibition may be brought about may vary in different cases and may be either functional or organic.

Narcolepsy and epilepsy may be associated in the same person and one condition may merge into the other. In fact, both have so much in common that it may be impossible at times to draw a distinct line between them.

Ephedrine appears to be very effective in some cases. Cave treated one patient who was having thirty attacks a day on 50 mg. of ephedrine three times a day, with the result that the patient was able to return to his occupation as salesman.

J. B. Doyle and L. E. Daniels[15] treated six patients with ephedrine with an average dose of 3/8 to 3/4 grains three times a day. Five were completely relieved of the irresistible desire to sleep and of cataplexy. The sixth patient was relieved of cataplexy and hypnologic hallucinations, and somnolent tendencies were markedly improved. In certain instances, it was necessary to give as much as 1 1/8 grains three times a day to get relief from the symptoms.

EPILEPSY

The most recent views of this symptom complex are set forth in a very clear manner by Temple Fay[16]. Because of the ease with which convulsions may be precipitated or prevented, Fay feels that we are dealing with mass reactions of the cortex rather than a "disease" of the motor areas. He likens the path of convulsive seizures to a reflex arc, that is, of having three fundamental neurological components (namely, sensory conductors, integrated distributors of this impulse with inhibitory and threshold controls, and finally, motor cell expression to the muscle). He, therefore, suggests that the attack of the seizures be made along three lines:

(1). By diminishing or preventing the sensory impulse for the motor (mass) reactions.

(2). By raising the inhibitory threshold and interrelated controlling centres to prevent such stimuli from spreading throughout highly integrated cortical and subcortical levels, and thus checking or localizing such mass reactions.

(3). By depressing or destroying the motor elements responsible for the externalization of the discharge.

Fay cites the work of Gamble[17], who showed the tendency of the epileptic toward water storage during the interval between the attacks with a definite release of this fluid immediately following the seizure. Gamble also was able to determine that this fluid storage is maintained in the interstitial compartment, which is dependent upon the fixed base of sodium for its fluid volume.

Any factor which interferes with normal fluid balance and its mobility, Fay believes, will determine the periodicity of attacks. Such physiological determinations surrounding an attack include anoxemia, the effect of slight changes of PH to the acid side on the oxygen dissociation curve, CO_2 relationship, alkalosis, edema and increased permeability. All these factors influence capillary activity to fluid.

The method involved that gives the greatest freedom from attacks in the hands of Fay and his associates is the strict limitation of total fluid intake to below twenty ounces per day and a solid "dry" diet sufficient to meet the needs of the skin, breath and bowels without permitting any demonstrable increase in urinary output. He advises a search for all mechanical circulatory deficiencies and the factors surrounding proper elimination, and especially those concerned with carbohydrate metabolism and water storage.

That convulsions may be readily produced by disturbance in water balance has been demonstrated by a method utilized by Irvine McQuarrie and D. B. Peeler[18]. These authors have been able to establish a rapid positive water balance in epileptic patients with ready production of seizures by giving two to five cc. of water per kilogram body weight at either three or four hour intervals with simultaneous injections of posterior lobe pituitary extract or pitressin to prevent water diuresis. Attacks were precipitated within twelve to forty-eight hours. Control non-epileptic patients put on the same régime were free of any epileptic phenomena.

Under the conditions of these experiments, dilution of the extracellular body fluids appears to be an essential factor in the induction of seizures, since administration of an amount of sodium chloride just sufficient to prevent this tends to interfere with their occurrence. McQuarrie and Peeler feel that the results of their experiments lend strong support to the view that the mechanism for controlling semi-permeability of

the brain cell membrane is inherently defective in the epileptic patient.

According to H. Hopkins-Detrick[19], the most important principle underlying the starvation treatment, induction of acidosis and dehydration, is the readjustment in electrolytic balance, chiefly characterized by a marked rise in the available calcium ions. According to the experimental biologists, the bivalent ions, calcium and magnesium, and the univalent ions, sodium and potassium, have antagonistic action toward each other, the former ions decreasing cellular permeability and, therefore, irritability, and the latter ions exerting the opposite effect.

On the basis of these principles, Hopkins-Detrick has utilized the following treatment in his epileptic patients:—the administration of potent extracts of parathyroid gland, together with calcium salts. This increases the ionic calcium of the blood and tissues to a high level in a relatively short period. To increase the absorption of calcium from the intestinal tract, the patients were also given large amounts of cod-liver oil. Water was restricted to an amount well tolerated by the patient, and salt-free diets were also used to decrease the thirst and to remove the antagonistic action of sodium and chloride ions toward calcium.

By following this method, Hopkins-Detrick found that not only did convulsions disappear, but there was also general physical and mental improvement. According to the author, the regimen outlined appeared to have been equally effective in all types of epileptic conditions, whether idiopathic or traumatic.

After following four hundred and fifty epileptics for eight years, H. J. Schou[20] found that treatment with phenobarbital allowed 75 per cent of institutional patients to do useful work and that at least 50 per cent were able to get along outside of institutions. In his experience, if moderate doses are ineffective, then larger ones rarely are; that phenobarbital is much more effective against convulsions than against psychic equivalents; that the drug should not be discontinued suddenly because of the danger of status epilepticus. He found that "somnifen" (diethyl-dialyl-barbiturate of diethylamin) by intramuscular injection in 100 cases had reduced the mortality of status from 75 per cent to 0. Although for eight years the patients were restricted to 50 grams of meat daily, with no meat soups, recently 44 patients were suddenly put on a diet of abundant meat and meat soups with the surprising result that the number of attacks was actually decreased. It was found that restriction of chlorides was useful only in patients treated with bromides and unnecessary in those on phenobarbital. The ketogenic diet was not of any value in the patients (adults) that received it. However, the starvation treatment was of real value in patients with frequent attacks.

ENCEPHALITIS

After studying the histological changes in four cases of chronic encephalitis, Robert Carmichael[21] correlates his findings with the incidence of postencephalitic parkinsonism. In two of four cases studied, he found marked falling out of the cells in the substantia nigra and in the other two cases there was an escape of a much larger proportion of these cells. In the former instances, well-developed parkinsonism resulted, while in the latter two cases the patients escaped this sequela. The author believes, therefore, that if a sufficient number of cells escape involvement, parkinsonism will not necessarily develop. Other cell groups were involved in the disease, but they were not markedly involved and seemed capable of recovery.

Carmichael feels that although there may be a sufficient supply of antibodies to overcome the disease in its acute form, they are probably deficient in overcoming the chronic disease. This is because the cerebrospinal fluid contains a very small amount of serum protein which it has derived from the perivascular spaces, and consequently any protective substances in the serum will reach the brain in very high dilution. Such a mechanism is in contrast to that existing in meningitis, in which disease the permeability of the vessel walls are altered and a fluid rich in plasma protein is exuded. It is probable, therefore, that antibodies must reach a high concentration before they can become effective in the diluted fluid of the perivascular spaces.

TREATMENT OF CHRONIC ENCEPHALITIS

Stramonium continues to be widely used in postencephalitic sequelae. In the experience of Patricia Steen[22], this drug gave great benefits to sixteen patients with parkinsonism. In four cases of chorea-athetoid type of disease, there was no beneficial effect; in fact, in two of these cases, the symptoms appeared to have been aggravated.

C. Roemer[23] reports that atropin caused great relief in many cases of chronic encephalitis that he has treated. He states that large doses of the drug should be used and that tolerance is readily acquired. Careful observation is essential, however, during the period the dose is being increased. On the whole, however, from their own experience and from that cited by others, the authors do not believe that there is any permanent relief to be expected from any of these forms of therapy.

RARE FORMS OF ENCEPHALITIS

Reports of encephalitis of widespread and destructive involvement of the brain continue. These types of encephalitis are usually termed acute disseminated encephalitis or acute encephalomyelitis. They may develop during the course of such acute diseases as chicken pox or

measles, occasionally follow vaccination against smallpox, or occur without any apparent associated or preëxisting disease.

The diagnosis between this form of encephalitis, acute multiple sclerosis, and Schilder's disease (encephalitis periaxialis diffusa) is often very difficult.

Roy R. Grinker and Peter Bassoe[24] in a paper describing four cases of disseminated encephalitis with autopsy reports include some helpful differential histological features of the various types of non-suppurative encephalitis.

Analysis of many more cases is necessary before the various types of encephalomyelitis can be definitely classified, clinically and pathologically.

NEUROSYPHILIS

The effect of malarial treatment upon the brains of nine general paretics, who died a short time after the therapy was given, was noted by D. E. Paulian and I. Bistriceanu[25]. The histologic changes were less marked in those patients who had survived a month. It was observed that the longer the survival, the fewer the spirochetes; in some cases, no organisms were found. Furthermore, the spirochetes were distinctly degenerated or atrophic. Numerous or healthy organisms were never seen as in untreated cases.

MALARIAL AND TRYPARSAMIDE THERAPY

Numerous reports continue to be made in this country and abroad regarding the efficacy of malarial treatment, not only in paresis, but in other forms of neurosyphilis.

George S. Johnson and Roland A. Jefferson[26] report their experience with this type of treatment in two hundred and seventy cases over a period of five years. In one hundred and thirty cases of paresis, 32 per cent showed a complete arrest in contrast to 5.2 per cent of sixty-one cases not receiving malaria.

In twenty-four cases of tabes receiving malarial therapy, 33.3 per cent had a complete arrest; in eight cases not receiving malarial treatment, 12.5 per cent had a complete arrest.

In twenty-eight cases of cerebral lues receiving malarial inoculation, 24 per cent had a complete remission. Nineteen cases with this form of neurolues showed 11.7 per cent completely arrested.

It was found that in those patients who obtain a good remission, there was a tendency toward a complete serological recovery. Johnson and Jefferson feel that eight paroxysms are usually sufficient; in some cases, good results were obtained with only three or four paroxysms. Long courses of treatment, they feel, are too debilitating and may defeat the aims of the treatment.

From Hungary, E. von Thurzo, B. Balla and A. Koppandy[27] give their experience with malarial and relapsing fever. They received better results with the former method of fever therapy. They obtained more complete remissions in pure paresis than in taboparesis. According to them, no results are to be expected when the mental symptoms have existed for more than one and a half years in patients over fifty years of age.

V. Hendriksen[28] reports the results from a Danish institution where three hundred and nineteen men received malarial therapy from 1922 to 1929. Good remissions occurred in 47.7 per cent with 27.3 per cent able to return to work.

Udo J. Wile and Kenneth M. Davenport[29] obtained good results with malaria therapy in neurosyphilis other than paresis. Thus, 53 per cent of their tabetic patients showed immediate improvement. In the group of early central nervous system lues, all eight showed immediate improvement, seven of whom later remained asymptomatic. In twenty-four cases of later occurring diffuse neurosyphilis, all but one case showed immediate striking improvement. The later follow-up of this group showed improvement in 84 per cent, no change in 10 per cent, and a change for the worse in 6 per cent.

H. C. Solomon and S. H. Epstein[30], who have had long experience with both malarial and tryparsamide treatment, state that good clinical responses may be expected in from 30 per cent to 35 per cent of general paresis by either method. A combination of the two methods is usually more efficacious than one alone. Their routine is to begin the treatment with malaria when possible and follow this with tryparsamide until a negative serology is obtained and remains so for several years. To obtain negative serology, usually two years of continuous tryparsamide therapy is necessary, sometimes much longer. In their experience, the effect of tryparsamide on other types of neurolues than paresis is, on the whole, good, especially when the symptoms are of recent origin.

FEVER TREATMENT OF PARESIS BY DIATHERMY

This newer method of therapy, which is being used in several clinics, is the subject of a paper by Neymann and Osborne[31]. Twenty-five paretics were treated over a period of eighteen months. Sixty-six per cent of the patients went into a good clinical remission and 8 per cent were markedly improved. The authors point out that the prime requisites of diathermy treatment are properly constructed electrodes, a machine powerful enough to give sufficient energy, and proper insulation of the patient. According to the mass of the patient, the amount of current introduced and the efficiency of the insulation, any type of temperature curve can be produced at will.

The number of courses of treatment varied from six to forty-nine with an average number of fifteen. The temperature was maintained

above 103.5°F for at least five hours at each treatment. The sixteen patients who had a good remission have remained out of the hospital from four to fifteen months.

Certain physiological phenomena during and after the treatment were noted. The pulse pressure was frequently greatly increased at first, but after a series of treatments, both the systolic and diastolic pressures were uniformly decreased and remained permanently at a low level. The red blood cells usually increased about a million, and the white blood cells increased from three thousand to four thousand per cubic millimeter. There was also a slight relative increase of the polymorphonuclear leucocytes and eosinophiles, with a corresponding decrease of the small and large mononuclears. Chemical changes in the blood showed the following: An increase in non-protein nitrogen and uric acid, a decrease in the CO_2 capacity of the plasma, and a slight tendency for the chlorides and the calcium to increase.

The serological changes did not correspond to the amount of clinical improvement. The cerebrospinal fluid showed a decrease in the number of cells in all cases, with but two exceptions. The globulin occasionally decreased in intensity. The colloidal gold also decreased in intensity in ten cases. The Wassermann reaction of the cerebrospinal fluid remained practically unaltered.

No deaths resulted from the treatments in the twenty-five cases. There were no complications, such as anemia or jaundice so frequently seen in malarial treatment.

SULPHUR TREATMENT IN PARESIS

Sulphur, when injected intramuscularly, according to R. P. Mackay's[32] clinical studies, causes the same therapeutic results as any other form of fever can produce. Sulphur in oil causes a high fever, which continues from 36 to 60 hours, an elevation in pulse rate, a diaphoretic and vasomotor response, not so marked as from typhoid vaccine fevers, and a marked polymorphonuclear leucocytosis. In Mackay's experience, the pain and tenderness at the site of the injection are not especially troublesome to the average paretic patient.

The so-called "protein" reaction, resulting from sulphur injections, is explained by Mackay on a basis of absorption of muscle tissue fragments from the resulting area of necrosis at the site of injection. Such areas of local necrosis were experimentally produced in rabbits by intramuscular injections of sulphur in oil and sulphur in acacia-saline solution.

MULTIPLE SCLEROSIS

The excitement created by the announcement of Sir James Purves-Stewart[33] and Kathleen Chevassut[34] that they had discovered the cause of multiple sclerosis has completely subsided, since their work has been repeated and subjected to more rigid tests.

The experiments of J. A. Braxton-Hicks and F. D. M. Hocking[35] show that the spheruli described by Chevassut are present in spinal fluid from many conditions other than multiple sclerosis. Similar reports have been made by Lefevre, Mollaret, and Tronconi. Braxton-Hicks and Hocking further point out that many of the essential bacteriological conditions, especially that of the need for the immediate transference of the spinal fluid to the broth-serum mixture, laid down in the original paper, appear to be open to considerable elasticity on further investigation. Although these authors have not been able to obtain agar slip cultures, Tronconi has accomplished this, not only in multiple sclerosis, but in other lesions of the nervous system. Furthermore, Braxton-Hicks and Hocking do not believe the spheruli to be a virus, but consider them a flocculation or precipitation phenomenon produced by the interaction of the spinal fluid and the blood serum. They have not been able to study a sufficient number of normal spinal fluids to determine whether this phenomenon indicates a pathological fluid or whether it occurs with any fluid.

Arthur Weil[36], too, was unable to prove that cultures obtained from the spinal fluid of multiple sclerosis yield a filterable virus and that this virus is responsible for the production of the disease.

J. Schuster[37] also repeated Miss Chevassut's work, using similar media and optical apparatus. He considers the changes found in the media a chemical process. He found no benefit from the use of vaccine treatment.

Similar experience is reported by F. Georgi and O. Fischer[38].

THE SURGICAL TREATMENT OF SYRINGOMYELIA

A. J. Ssoson-Jaroschewitsch[39] has reviewed the whole subject of the surgical treatment of this disabling disease. He distinguishes between the "dry" form with poor prognosis and the "hydropic" form with increased pressure, with comparatively good prognosis.

The first to report successful operations in syringomyelia was Charles A. Elsberg, who related two cases in his book, "Diagnosis and Treatment of Surgical Disease of the Spinal Cord and Its Membranes," published in 1916.

In 1930, Charles H. Frazier[40] reported his first case. Following this operation, urinary incontinence was immediately relieved, spasticity of the hands subsided, and sensation was partly restored. Frazier cites the work of Puusepp of Tartu, who operated on four patients with manifest improvement; Schmieden on one patient who showed improvement in movement of arm and leg and of sensation; Appel, who operated on six patients with results from negative to brilliant.

H. Peiper[41] tabulates the results of forty-

four operations reported by sixteen authors. There were good results in twenty-one of these cases; in five cases, improvement was remarkable.

Tracy J. Putnam and Donald Munro[42] have reported their operative experience with two cases of syringomyelia. In the first case, following an incision in the cervical enlargement of the cord with release of an ounce of yellow fluid, the patient was relieved of severe pain in the arm. In the second case, an incision in the cervical cord with an escape of 100 cc. of fluid under pressure, resulted in improvement of many symptoms, including sensory disturbances, spasticity of the legs, difficulty in walking, and weakness of the hands and arms. This patient is now seeking work. Putnam and Munro state that operation and x-ray treatment should supplement each other, for it is probable that incision of the cavity does not affect the gliosis, while x-ray treatment probably does not affect the pressure within the cyst.

THE TREATMENT OF PERNICIOUS ANEMIA

It is well to preface a discussion of the treatment of the neurological involvement in pernicious anemia by including some rules of therapy laid down by George R. Minot[43]. This author stresses the important fact that the adequate treatment of pernicious anemia is not merely by liver, kidney, stomach, or other organ preparations, but by enough potent material, irrespective of the source, for the given person throughout life. In treating the lesions of the nervous system, Minot states, the potent material must be administered not merely to the point of maintaining the normal blood picture but to a point beyond this. Continuation of treatment with maximal amounts of the potent material must be persisted in, particularly when the neurological symptoms tend to progress or cease to lessen.

These principles of treatment of the cord lesions of pernicious anemia are fulfilled in a thorough report by M. M. Suzman[44] of one hundred cases of subacute combined degeneration. This author has made a comparison of this group treated with liver and sixty-one control cases (not treated with liver). Of the one hundred patients, fifty-five improved, nineteen were unimproved, and twenty-six died. Of the sixty-one control cases, all died. Most of the deaths in the liver treated group had been given an inadequate amount of liver, the remainder having died of accidental causes, unconnected with the pernicious anemia itself. Of the unimproved cases, inadequacy of liver therapy also existed in the majority of instances.

Of the fifty-five improved cases, there was marked improvement in neurological signs and symptoms in many of the patients following therapy. For example, paresthesias complained of by all the fifty-five patients disappeared in six cases and became negligible in ten other cases. In thirty-seven other cases, this symptom was improved in both extent and intensity. Again, of forty-six patients previously complaining of joint sensibility, this symptom disappeared in twenty-six patients. Improvement also occurred in many instances of incoördination, astereognosis, visual disturbance, memory impairment, and of difficulty in walking. Of sixteen cases bedridden before therapy only one was so confined following a course of liver treatment; of eleven previously using crutches or needing aid in crutches or needing aid in walking, only one walking, only one needed this help following treatment. Twenty-one patients who walked with the aid of a cane before treatment were able to get along without this aid after therapy. Massive doses of liver were administered, in some cases as high as 480 Gm. whole liver per day. The usual dosage in the improved cases was about 240 Gm. daily.

The author concludes from his study that it is evident that liver, if given in large enough amounts, exerts a beneficial effect upon the signs and symptoms of subacute combined degeneration of the cord and that the early administration of such treatment is necessary to obtain good results.

In another large series, 115 cases studied by K. C. Smithburn and L. G. Zerfas[45], the results of liver treatment on the symptoms of subacute combined degeneration are not quite so impressive as in the previous study cited. The above authors concluded that improvement in neural and psychic signs under adequate amounts of liver may occur, but they believed that such beneficial results are partly or wholly due to the improvement in the general condition.

Liver in these cases was usually given in amounts sufficient to maintain a normal red blood cell level*. It was found that under such dosage there was improvement in such symptoms as paresthesias, ataxia, irritability, introspection, and mental depression. The authors believe that the lesions in the spinal cord when advanced do not respond readily to treatment and may even progress under maximal amounts of liver. They also feel that liver extract does not contain any specific antineurotoxic substance. Maximal doses of a potent fraction of liver are advisable during intercurrent infections or in the presence of increasingly severe neural manifestations.

EFFECT OF ELECTRIC SHOCK ON THE NERVOUS SYSTEM

Any report on this subject is very welcome because of the paucity of clinical data on the effect of electricity on the nervous system.

F. Panse[46] has analyzed the data of forty-three cases of electrical injuries in industrial accidents. A large group of these patients showed

*In Suzman's series liver was given in amounts above that sufficient to maintain normal blood levels. This may account for the more striking results in Suzman's cases.

atrophic flaccid paralyses of one or more extremities. The voltage in practically all the cases ranged from 75-1000. In about two-thirds of these cases, consciousness was either not lost or only momentarily impaired. There was an interval of anywhere from a few days to several months before the paralysis set in. The longer this interval, the author believes, the more progressive and unfavorable the course. Paresthesias usually are present during the period of latency. The author believes that the development of the cord lesions must be due to secondary edema or other vasomotor disturbances.

Other lesions following electric shock include spastic phenomena, multiple sclerotic-like syndromes and lesions of peripheral nerves, but these cases are comparatively rare. The author also describes cerebral lesions, due to vasomotor disturbances, secondly to electric trauma to the extremities.

He cites instances in which necrosis of one or both tables of the skull occurred, in which the brain often escapes serious injury while in some cases abscess later results.

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CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 19041

PAIN, JAUNDICE AND AN UPPER ABDOMINAL MASS IN A WOMAN OF FIFTY-FOUR

SURGICAL DEPARTMENT

A widowed Swedish cook fifty-four years old entered the hospital complaining of sharp stabbing pain in the right upper quadrant with jaundice of a month's duration.

Two months before entry she had jaundice, malaise, frequent vomiting after meals and constipation. The vomitus was green and bitter. Her stools were clay colored. In two weeks this cleared up. Four weeks before entry she had a similar attack. Three weeks later, while the symptoms were still present, she had sharp stabbing pain under the right breast going through to the scapula. Five days before entry she had another attack of cramp-like right upper quadrant pain doubling her up and relieved by morphine. Her urine had been very dark recently. She thought the jaundice was now clearing slightly. She had lost twenty pounds during the illness.

The family history is irrelevant.

She gave a past history of measles and malaria.

Physical examination showed a well-nourished woman with very yellow skin and sclerae. There were many excoriations over the body. The lungs were clear. The heart was slightly enlarged to the left. The sounds were distant and of poor quality. There were no murmurs. The artery walls were palpable. The blood pressure was 130/80. The liver edge was felt one finger-breadth below the costal margin. There was slight tenderness in the right upper quadrant. In the suprapubic region was a large irregular slightly tender mass. Pelvic examination showed a lacerated cervix with a hard nubbin on the right. The uterus was enlarged, hard and tender. The pupils and reflexes were normal.

The urine was normal in amount and dark. The specific gravity was 1.020 to 1.015. Both of two specimens (not catheterized) showed bile, white cells and occasional red cells. Blood examination showed 4,220,000 reds, hemoglobin 75 per cent, white cells and smear normal. The stools were clay colored on two examinations. The bleeding time was three minutes, the clotting time nine minutes.

Before operation the chart was not remarkable.

On x-ray examination the heart and diaphragm were not remarkable. A flat abdominal film showed no visible gall stones. The outline of the left kidney was visible, that of the right indistinct. The liver shadow was unusually dense.

A week after entry, operation was done. That afternoon she developed signs of delayed shock which did not respond to the usual shock treatment. Transfusion was of only temporary benefit. During the night a second transfusion was done. Early the following morning the patient died.

CLINICAL DISCUSSION

DR. MAURICE FREMONT-SMITH: This is the story of a fifty-four year old woman who begins with jaundice, malaise and vomiting and no pain. Then the jaundice clears and she has a recurrent attack of jaundice, not with pain at the beginning but during the middle of the attack. The pain is of the usual type that we might expect with gall stones. We have evidence that she had an obstruction of the common duct. The stools are light colored; the urine is dark. We have to decide whether the usual diagnosis of gall stones, for which we have a good many evidences, is sufficient, or whether we have to assume some other diagnosis.

The story is unusual for gall stones in this regard, that in gall stones we expect severe pain early, and jaundice, if it comes at all, a day or two days or three days afterward. We do not expect jaundice without pain and pain later. In the second place the pain is not usually described as sharp stabbing pain in the right upper quadrant. It is much more apt to be severe, boring, unbearable pain; and that may have been the type of pain she did have as it is described in the second paragraph.

We should expect excoriations in any long continued jaundice which causes itching.

"Pelvic examination showed a lacerated cervix with a hard nubbin on the right." I suppose that means a little nubbin on the right of the cervix. There is no possible way in which that pelvic situation can account for the jaundice except by an almost miraculous metastasis from a carcinoma of the uterus to a gland that happened to press on the common duct. So whatever there is in the pelvis probably is not related to the present story. She probably has a fibroid. It is possible that she has a cancer of the fundus. We should like to know whether the uterus was movable or not, whether it was irregular or not. Of course "hard and tender" would go with fibroid, although fibroid is not usually tender,—nor is cancer of the fundus.

MISS PAINTER: The uterus was irregular.

DR. FREMONT-SMITH: The red cells and white cells in the urine were possibly and quite probably secondary to the long-continued irritation of the kidney caused by bile in the blood. Possibly the cells came from a vaginal discharge.

The hemoglobin examination must have been excessively difficult to do on a Tallqvist scale in the presence of bile in the blood. We do not really know what that was. This is an unusually normal clotting time for a woman who had been jaundiced so long, and in spite of that I should be afraid that after operation the bleeding might be excessive.

DR. GEORGE W. HOLMES: The only thing of interest that was spoken of in the x-ray report was the unusually dense shadow of the liver. It certainly is unusually dense if this picture represents the liver, and I think it does.

DR. RICHARD C. CABOT: Isn't it a queer shape?

DR. HOLMES: Yes; it lies nearer the midline than normal. The shadow is on the right side and is I think the liver. I do not know that there are any diseases of the liver which produce a dense shadow by x-ray. We do get a dense liver shadow after giving certain dyes. This patient had a gall bladder examination, but there is no mention of a dye being given. I assume these are plain films taken to show whether or not gall stones are present. Only about one-third of the gall stones that are actually present show in such films. These films are negative. She has no evidence of enlargement of the heart or of disease in the lungs, and there is nothing unusual in the position of the diaphragm. There is nothing here to suggest that she had either passive congestion of the liver or enlargement from any other cause. This shadow, if it represents the liver, is rather small and dense.

DR. FREMONT-SMITH: Is it not true that in the presence of marked jaundice the Graham test is not practical, does not show the gall bladder?

DR. HOLMES: That is said to be so. I think it depends on what the cause of the jaundice is.

DR. FREMONT-SMITH: Is there any reason for not giving the dye in cases of marked jaundice?

DR. HOLMES: I think not.

DR. FREMONT-SMITH: There is one thing that should be said. Too many people with jaundice are not operated upon, and later it is found, perhaps at autopsy, that there were gall stones and that they could perhaps have been cured. So wherever we feel that the choice lies, as it does here, between cancer and gall stones, and if the chances are that it may be gall stones, it certainly is worth giving the patient the opportunity of having operation if he and his family wish to take it, because sometimes we find a gall stone that can be removed in a patient who has had very little or no pain.

Of course the other possibility, which I do not entertain because of the acuteness of the onset and the disappearance of the jaundice after it came on, is cirrhosis of the liver.

I think the diagnosis lies between a neoplasm or a gall stone, in either case causing blockage of the common duct.

A STUDENT: What is the likelihood of postoperative hemorrhage in jaundice in such cases? How much does that increase the risk?

DR. FREMONT-SMITH: Very definitely, especially of oozing afterwards, oozing which is very difficult to control even with repeated transfusions. Of course the fact that the clotting time is normal, again is against oozing, but the first thing we must remember is that if there is any mistake in the technic of determining the clotting time the mistake causes a shortening of the clotting time. If we get a clotting time of 20 minutes the clotting time is almost certainly prolonged. If on the other hand we get one of six minutes it may in fact be 20 minutes. So she may have a longer clotting time than we think. In any case, I think the danger of hemorrhage after operation in a patient who has been jaundiced for some time is a great additional risk.

A STUDENT: You said that the condition of the pelvis is not related to the condition of the gall bladder. Is it unusual to have a metastasis, for example, from an epithelioma of the cervix to the gall bladder? I thought it might be a metastasis to the liver and the gall bladder.

DR. FREMONT-SMITH: Do you think we can explain the picture as metastasis to the liver?

A STUDENT: My question is this: Is it unusual to have those metastases?

DR. FREMONT-SMITH: My feeling is that metastasis from the stomach, for instance, and from the intestinal tract is much more frequent than from the uterus.

DR. TRACY B. MALLORY: Yes, it is.

A STUDENT: Once a person is jaundiced from malignancy, why would he not stay jaundiced?

DR. FREMONT-SMITH: They usually do, and I think it is a good argument against malignancy in this case. They usually do, but not always, because obstruction or partial obstruction may occur in the intestinal tract as a result of cancer and then loosen up again. Whether or not the obstruction is actually caused by inflammatory reaction about the carcinoma, subsiding as the inflammatory reaction subsides, we do have obstruction from carcinoma clearing and then recurring. But usually when we get jaundice from cancer we can be pretty sure we are going to keep it.

DR. CABOT: I think your point is right, though, that jaundice from cancer does sometimes let up.

A STUDENT: It lets up with cirrhosis too, does it not?

DR. FREMONT-SMITH: I had felt that it does not.

A STUDENT: There was a case in the wards two weeks ago which cleared so that everyone who had seen it before thought the change was very definite.

DR. MALLORY: In Hanot's original description he speaks of intermittent jaundice as characteristic of hypertrophic cirrhosis.

A STUDENT: How do you explain this green bitter tasting vomitus, which must be bile, on the basis of complete obstruction of the common duct?

DR. FREMONT-SMITH: If there was bile of course there was not complete obstruction at that time. You can have a gall stone that causes jaundice without complete obstruction, and you can have poor observation of what is vomited.

PREOPERATIVE DIAGNOSES

Obstructive jaundice.
Stone in the common duct.

OPERATION

A high right paramedian incision revealed a green colored liver characteristic of obstruction. The gall bladder was very small, contracted, representing a tumor mass with almost no lumen situated in the region of the cystic duct. The common duct was large and contained a stone at about the level of the cystic duct. The stone was removed. The patency of the papilla was established. The contracted, almost obliterated gall bladder was removed and the common duct drained with a T tube. The patient was in fair condition at the end of the operation. At that time there was no evidence of abnormal bleeding.

PATHOLOGIC REPORT

Cholelithiasis.
Chronic cholecystitis.

FURTHER DISCUSSION

DR. FREMONT-SMITH: So the term "tumor" was used in the correct sense of a mass, but it was a chronic cholecystitis, not malignancy.

Whether she died of hemorrhage or not I do not know. I think the probability is that she did. What we shall find in the pelvis I do not know, — probably a fibroid, possibly a malignancy.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Chronic cholecystitis.
Stones in common bile duct.

DR. MAURICE FREMONT-SMITH'S DIAGNOSES

Gall stones.
Uterine fibroid or possibly malignancy.
Postoperative hemorrhage.

ANATOMIC DIAGNOSES

(Chronic cholecystitis with choledocholithiasis.)
Jaundice.
Cholecystectomy with drainage of the common duct.
Massive hemorrhage into the peritoneal cavity.
Leiomyoma of the uterus.

PATHOLOGIC DISCUSSION

DR. MALLORY: We found very little more at autopsy except a fibroid in the uterus and a very large amount of postoperative hemorrhage. The peritoneal cavity contained about three liters of blood, most of it in the general region of the gall bladder, the right gutter, some of it over the surface of the liver. There was no question in our minds but the death was due to postoperative hemorrhage, as it not infrequently is in these cases. They had successfully removed the stone from the common duct and there were no other stones, as we sometimes find even when one has been successfully removed.

DR. FREMONT-SMITH: Have you any idea whether such hemorrhages could have been avoided if she had been given calcium beforehand, or if they had done transfusion beforehand?

DR. MALLORY: They probably did give calcium beforehand. They almost always do, even when the clotting time is normal.

A STUDENT: Does stricture of the common bile duct mechanically lead to enlargement of the liver?

DR. MALLORY: Yes; we can get just from stasis a markedly large liver that will extend a hand's breadth below the margin, and then with relief of the obstruction will recede in a few days to almost normal limits. We see that sometimes in cancer of the papilla where a successful anastomosis has been done between the liver and the stomach. The liver was not particularly big here, 1560 grams, but was very deeply jaundiced.

DR. HOLMES: Was there any evidence of iron deposit in the liver?

DR. MALLORY: None was noticed. Bilirubin has no iron in it.

A STUDENT: How was that nubbin explained?

DR. MALLORY: I suppose it was a lacerated cervix. Some 30 per cent of marital cervices, I should say, show that.

DR. CABOT: Do you think that shadow in the x-ray is the liver, Dr. Holmes?

DR. HOLMES: Yes. I still do not know why it appears so dense. It is a small liver, and that shadow would correspond to it very well. I do not believe that the bile pigment would do it, but if there was a large amount of broken-down hemoglobin with iron, that might explain it.

DR. MALLORY: I remember a case at another

hospital of a girl who came in with simultaneous occurrence of catarrhal jaundice and acute salpingitis. The surgeon who was taking care of the case waited some three weeks until the jaundice had entirely cleared up, waited another week, then operated on the tubes, doing a bilateral salpingo-oöphorectomy. She died during the night. We found several liters of blood in the peritoneal cavity. There was no evidence of slipping of any suture. She had died from hemorrhage. So that it is possible not only in the acute stage of jaundice but even when the jaundice has entirely cleared up that the tendency to hemorrhage may persist for quite a while longer.

CASE 19042

PERSISTENT DIARRHEA ASSOCIATED WITH STUPOR AND A SPINAL FLUID CONTAINING CELLS

Neurological Department

Presentation of Case

Dr. Edwin M. Cole*: This is the case of a fifty-six year old white Swedish-born housewife who entered the hospital because of vertigo and dull headache.

She was perfectly well until eleven weeks before admission, when she suddenly developed diarrhea which became more and more acute until she had bowel movements every ten minutes during the day. This persisted for a month. Towards the end there was some blood in her stools. There had never been pain in the abdomen. As far as she and her husband knew she had no temperature. Nine weeks before admission, two weeks after the onset of the diarrhea, while milking she was struck in the left temporal region when the cow raised her leg. The blow was not very severe; the patient did not lose consciousness. Following this she had severe frontal headaches almost continuously, with periods of dizziness and occasional periods of vomiting. The dizziness persisted during the nine weeks before admission. She had nausea so severe that she could not raise her head from the bed without vomiting. During the six weeks before admission she was in bed all the time. One week before admission her husband noticed that she had become more and more confused mentally. At the end of the day she talked about things which so far as he knew had not happened at all. She also had ringing in her ears.

The family history was essentially negative. She had been married twenty-four years. Her husband and two sons were living and well. She had had no other pregnancies.

The past history was negative except that her husband thought she had been losing some weight.

Physical examination showed a rather obese woman in no great pain. The temperature, pulse and respirations were normal. The heart seemed slightly enlarged. There was a soft systolic murmur over the second right interspace. Pelvic examination revealed a relaxed perineum with a quite badly lacerated cervix. There was profuse foul smelling vaginal discharge.

On neurologic examination she was quite dull. She responded to all questions with "Yes" or "Pretty good." There was a papilledema of two or three diopters on both sides; no difference on the two sides. No pathologic reflexes could be obtained. Those on the right side were more active than those on the left. There was evidence of possible slight astereognosis of the left hand, though this latter was somewhat in doubt because of her inability to coöperate and name objects. Those were the only positive neurological findings when she entered.

The urine at admission showed many white cells. This was always the case later even when she was catheterized. The red blood cell count was 4,700,000, the hemoglobin 65 per cent, the white cell count 14,000, the smear negative at the time of admission.

We thought that since the neurological findings did not make a diagnosis possible, lumbar puncture was warranted. A puncture done shortly after admission showed an initial pressure of 195. The fluid showed 73 lymphocytes per cubic millimeter, total protein 48, sugar 80, and gave a paretic colloidal gold reaction and a negative Wassermann. Blood Wassermann tests done here and at the State laboratory were negative.

Skull plates taken at that time showed no definite evidence of increased intracranial pressure, but there were some areas of increased density along the parietal region of the skull on both sides suggesting a pachymeningitis of the luetic type. Following this, in spite of the negative Wassermanns the patient was given iodides for several weeks, with several injections of quinine iodobismuthate.

Shortly after admission she began to have a recurrence of diarrhea, which became more and more severe and was impossible to control. She also ran a moderate temperature which gradually came up to 101° and was irregular and rather septic in type. She had had several blood cultures taken, which were negative. A Widal test on the blood was negative. Four stools gave strongly positive guaiac tests. Stool cultures for typhoid, paratyphoid and dysentery were all negative. Stool examination for amebae and examination with antiformin preparation for tubercle bacilli were negative.

A gastro-intestinal series was done with some difficulty. The results were not very definite one way or the other. Examination with a

*Resident on the Neurological service.

barium enema was attempted, but the patient could not retain the enema.

Dr. Chester Jones proctoscoped the patient and found a great many polyps in the region of the sigmoid and small ulcerations from which there was bleeding.

Several other lumbar punctures were done. Each time the initial pressure was over 200. At one time the fluid showed a pressure of 240. The original cell count of 73 dropped to 4 lymphocytes per cubic millimeter.

The patient complained several times of stiff neck and noticed that she could not move her head freely. X-ray of the cervical spine was negative. There was no evidence of infection or of an arthritic process. She continued to run a temperature reaching 101° at times. She became gradually weaker and two months after admission died.

Dr. George W. Holmes: There is very little to be seen on these films. The patient failed to retain an enema after repeated attempts. This case was carefully examined, three attempts being made to fill the bowel. In a coöperative patient that usually means that there is a lesion present in the bowel even though we are not able to demonstrate actual obstruction.

This film was taken after barium had been given by mouth. It shows only a part of the stomach and small bowel. Retention in the stomach at the end of six hours in a debilitated and very ill patient does not necessarily mean an organic lesion.

In the skull films there are two things which perhaps should be pointed out. There is a general thickness and increase in density in the parietal region which is apparently in the dura. There is no evidence of increased intracranial pressure. There are no large blood vessel markings running to that region.

Clinical Discussion

Dr. Holmes: The lesion of syphilis is usually in the outer tables of the skull and would not produce such an appearance. A brain tumor of that size would certainly show increased intracranial pressure. We are inclined to interpret it as merely a manifestation of age and as being of no importance.

Dr. Leland S. McKittrick: I should be interested in knowing from Dr. Jones whether the polyps he saw were of the adenomatous type or of the type which we ordinarily associate with a chronic inflammatory process such as ulcerative colitis. There is quite a difference between the two. One naturally speculates as to the possibility that she did have the adenomatous type of polyps, one or more of which had become malignant and metastasized to the brain. This would seem quite unlikely; if the patient had an ulcerative colitis, as the proctoscopy suggested, the polypi would probably not be of the adenomatous type and would therefore be much less apt to become malignant. Moreover, cancer of the large bowel only rarely metastasizes to the brain. It happens undoubtedly. I think I have never seen a specific instance. Dr. Mixter can tell us better about that.

I should like to connect the lesion in the large intestine with the process going on within her skull, but there is insufficient evidence at hand from which to do it.

Dr. W. Jason Mixter: I think I have seen one case of metastasis to the brain from a large intestine lesion. I do not remember any others.

Dr. McKittrick: They are quite uncommon, are they not?

Dr. Mixter: Distinctly uncommon; but at the same time when there is malignant disease anywhere in the body and also evidence of a brain lesion, there is pretty fair reason for relating the two. If we can prove malignancy in the large intestine, the diagnosis should be intracranial metastasis.

Dr. James B. Ayer: The spine would be a much more logical place for metastatic malignancy from the intestinal tract. I should think we would have a spinal lesion if we had intracranial lesions.

Clinical diagnoses (from hospital record)

Brain tumor.
Ulcerative colitis.
Aseptic meningitis?

Anatomic diagnoses

Multiple adenomatous polyps of the large intestine with metastases to the liver, the lung and the cerebellum.

Pathologic Discussion

Dr. Tracy B. Mallory: I think Dr. McKittrick's point as to the importance of distinguishing on proctoscopic examination between cases of adenomatous polyps with perhaps a little ulceration and cases of ulcerative colitis with polypoid projections of the mucosa between the ulcers is well made.

This is a portion of the large bowel in this case. There is an extraordinary number of polyps of all sizes and descriptions. It must be regarded as a neoplastic condition and as far as I see can have no relation whatever to ulcerative colitis. Of course on proctoscopic examination, where only a few polyps could be visualized low in the rectum and sigmoid, where they were less typical, it might have been difficult to make a differential diagnosis. I have no idea how many thousands of those polyps there were in the large intestine. Every inch of the intestine was filled with them. Some were quite large, though none of them were indurated at the base. I could not pick out any one of them in a group and say that it was

cancer, and yet one of them had metastasized. There was a large metastasis in the liver, a large one in the lung and a small one in the cerebellum, undoubtedly connected with the neurological symptoms.

DR. MCKITTRICK: That specimen gives one a great deal of courage in insisting that colectomy is the only type of treatment for that lesion. It also shows the folly of delaying operation until one or more of the polyps becomes clinically malignant.

DR. MALLORY: Yes; there is nothing but complete colectomy worth considering as a therapeutic measure.

The average case of polyposis shows relatively few polyps. There may be two or three and there may be a dozen; seldom more than that. This was quite a general process.

In this section there is no evidence of invasion at the base of the polyp. In some areas the cells lining the glands are distinctly atypical in character. The cells are deeply basophilic and are beginning to look very much like the cells one often sees in large intestine cancers. On the other hand in none of the areas we picked out for sectioning is there frank malignancy. This one is a little more atypical than the rest but still non-invasive in character. Yet from one of these lesions without doubt the metastases must have developed.

This section is from the lung. There was a large single tumor mass in the lung and also a very marked invasion of all the subpleural lymphatics. The appearance of that lung was very closely similar to that seen in the skin of some cases of cancer of the breast when there is invasion of the skin, the so-called cancer *en cuirasse*.

This section is from the cerebellum, showing well differentiated adenocarcinoma. Diffusely invading the cerebellar tissue around the tumor are collections of small cells which appear to be lymphocytes and plasma cells. Inflammatory reaction around cancer is not very unusual. Dr. Kubik raised the question as to whether in this case the 73 lymphocytes found in the spinal fluid might be explained by this inflammatory reaction which we found around the tumor.

DR. MCKITTRICK: Were there any glands in the mesentery of the large bowel?

DR. MALLORY: No; the process apparently jumped straight to the liver and lungs and then to the brain.

DR. J. H. MEANS: Then in your opinion this was in the beginning an essentially benign lesion, these widespread polyps, and later one of them became malignant and metastastized?

DR. MALLORY: Yes. We have a number of specimens from other cases in which there are two, three and four polyps in the sigmoid, benign in character, and then one typical cancerous area arising from any one of the group which will be ulcerated and constricting.

When we have these multiple polyps of course removal of one malignant tumor would probably be a quite temporary measure, because the chance of malignancy developing in one of the others is considerable and one can never guess how far the polyps may extend. It is marked in the rectum and gets less and less so as we go up, but it may extend the entire length or may even be associated with a stomach polyposis.

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THE INDEX CATALOGUE OF THE SURGEON-GENERAL'S OFFICE

THE publication, this year, of Volume 10, the last in the Third Series, of the Index Catalogue of the Library of the Surgeon-General's Office, United States Army, recalls to mind what has been aptly described as "America's greatest contribution to medicine." This Catalogue, begun in 1880 by Dr. John Shaw Billings, covered a period of fifteen years up to 1895 in the First Series. The Second Series brought the index of medical literature through a period of eighteen years to 1914. These two series, of sixteen and nineteen volumes each, constituted a complete review of all the available literature that could possibly be of interest to physicians and required over a volume per year of some 1400 double-column pages.

The Third Series, now ended, covers a period of seventeen years from 1915 to 1932, during which time only ten volumes have been published. This is due to the fact that there has been a curtailment of material under the names of authors, which detracts slightly from the value of the Catalogue. Formerly, under a physician's name, one could find not only a list of his books, if any, but also notations of his most important papers which had appeared in the periodical literature. These papers now only appear under the subject headings, which, fortunately, are very wide in their scope, thus not reducing materially the real value of the Index. The work, on the whole, is remarkably extensive and correct, for the Surgeon-General's Library, now containing a third of a million bound volumes plus a half-million pamphlets, is one of the great medical libraries of the world; from this great mass of material the Librarian and his assistants seem to miss nothing of importance in both book and periodical medical literature. That more errors do not occur in this complicated listing of material is surprising; the corrections noted at the end of the last volume to be published comprise only thirteen for the whole First Series of sixteen volumes and only slightly more for the Second and Third Series. This record, probably unequalled in any publication of its kind, is greatly to the credit of Dr. Billings and the subsequent compilers.

It is pleasant to know, moreover, that this unusual series of books will not be given up at the end of the present series, for Colonel P. M. Ashburn, the Librarian, in the preface to Volume 10 of the Third Series, writes that work on the Fourth Series is to be begun at once. One wishes that the Librarian could find some way to go back to the original system of more complete cataloguing under authors, used in the first two series, but perhaps this is not possible, and certainly we should be thankful, without undue criticism, for all that the Surgeon-General's Library offers.

HOUSE BILL NO. 106*

THE bill, on which a public hearing will be given at an early date, proposing a change in the medical practice act is one of the most important for the health of the people of the Commonwealth that has come before the legislature in recent years, and merits the support not only of every physician but of every citizen.

*The text of this bill appears on page 216.

It contains three provisions, as follows: that the Board of Registration in Medicine shall be given power of approval of medical schools from which it accepts candidates as eligible for examination; that the specification now in the statute that the school give four full annual courses of not less than thirty-six weeks in each year be omitted; and that the new requirements shall not apply to students who on the date of the passage of the bill are in schools now meeting the demands of the law.

The third provision needs little discussion. It is reasonable that candidates who have entered schools now eligible should, if they meet the other requirements, be permitted to take the examination. If the rules of procedure are to be changed, it is well to avoid, if possible, making the change while that particular procedure is in progress. Any elevation of standards is likely to work some hardship on some individual. This provision reduces markedly the size of the group for whom some hardship might result, and is worded as was that change in the statute which was made when the requirement of high school education became law.

It is not quite so obvious why the requirement of four full years of not less than thirty-six weeks in each year should be eliminated from the statute. In the first place, it is not very important as nearly every school now gives that much time to instruction, if one reckons from the date when the school opens in the fall to the date on which it closes in the spring. In the second place, this formal provision has nothing to do with quality of instruction and does not protect against graduates of diploma mills. In the third place, it makes a cleaner cut piece of legislation and is, in accordance with the most recent trends of legislation in this field, to omit details of administrative procedure required of the school and simply to give the board the power of approval of schools which are legally chartered and empowered to confer degrees in medicine.

The third provision is by far the most important. The arguments for it can be stated briefly. First, the situation in medical education demands it, as is shown by legislation in every other jurisdiction in the United States. Secondly, some discretionary power of approval of medical schools is authorized by statute in every jurisdiction except Massachusetts. Thirdly, in Massachusetts some discretionary power of approval is authorized for every board in the Division of Registration that accepts candidates from schools, except the board of registration in medicine.

This power should be conferred on the board of registration in medicine also. It is the oldest board of registration in Massachusetts, and because of the issues involved in its jurisdiction, it is the most important for the public welfare.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

MALLORY, TRACY B. M.D. Harvard University Medical School 1921. Instructor in Pathology, Harvard Medical School. Director of Pathology and Bacteriology Laboratory of the Massachusetts General Hospital. His subject is "Observations Upon Cardiovascular Syphilis." Page 177. Address: Massachusetts General Hospital, Boston.

WHITE, PAUL D. A.B., M.D. Harvard University Medical School 1911. Physician, Massachusetts General Hospital. Instructor in Medicine, Harvard Medical School. His subject is "The Diagnosis of Cardiovascular Syphilis." Page 179. Address: Massachusetts General Hospital, Boston.

SMITH, C. MORTON. M.D. Harvard University Medical School 1894. Clinical Professor of Syphilology, Emeritus, Harvard University Medical School. Consultant, Massachusetts General Hospital and Newton Hospital. His subject is "The Treatment of Syphilitic Cardiovascular Disease." Page 185. Address: 437 Marlborough Street, Boston.

LEVINE, SAMUEL A. A.B., M.D. Harvard University Medical School 1914. F.A.C.P. Assistant Professor of Medicine, Harvard Medical School. Senior Associate in Medicine, Peter Bent Brigham Hospital. Visiting Physician, Beth Israel Hospital. His subject is "Discussion of Syphilitic Heart Disease." Page 188. Address: 270 Commonwealth Avenue, Boston.

MIXTER, CHARLES G. M.D. Harvard University Medical School 1906. F.A.C.S. Assistant Professor of Surgery, Harvard Medical School. Surgeon-in-Chief, Beth Israel Hospital. His subject is "Contractions of the Neck Following Burns." Page 190. Address: 319 Longwood Avenue, Boston.

DOWNING, JOHN G. A.B., M.D. Harvard University Medical School 1915. Assistant Dermatologist, Boston City Hospital and Beth Israel Hospital. Dermatologist, St. Elizabeth's Hospital. Instructor in Dermatology, Tufts College Medical School. Teaching Assistant in Dermatology, Harvard University Medical School. His subject is "Dermatitis From Rubber Gloves." Page 196. Address: 520 Commonwealth Avenue, Boston.

MYERSON, ABRAHAM. M.D. Tufts College Medical School 1908. Professor of Neurology, Tufts College Medical School. Director of Research, Boston State Hospital. Senior Visiting Neurologist, Boston City and Beth Israel Hospitals. Psychiatric Examiner of Prisoners for the Department of Mental Diseases, Commonwealth of Massachusetts. Address: 270 Com-

monwealth Avenue, Boston. Associated with him is

LOMAN, JULIUS. M.D. Tufts College Medical School 1925. Instructor in Neurology, Tufts College Medical School. Research Psychiatrist, Research Division, Boston State Hospital. Assistant Visiting Neurologist, Beth Israel Hospital. Address: 270 Commonwealth Avenue, Boston. Their subject is "Progress in Neurology." Page 198.

The Massachusetts Medical Society

STATED MEETING OF THE COUNCIL

A STATED meeting of the Council will be held in John Ware Hall, Boston Medical Library, on Wednesday, February 1, 1933, at 12 o'clock, noon.

Business:

1. Reading record of last meeting in abstract.
2. Report of Committee of Arrangements for Annual Meeting.
3. Report of Committee on Membership and Finance, on Membership.
4. Reports of committees appointed to consider petitions for restoration to the privileges of fellowship. New petitions and appointment of committees to consider them.
5. Appointment of delegates to the annual meetings of the five New England State Medical Societies.
6. Appointment of three delegates and their alternates to meetings of the House of Delegates, American Medical Association, for two years beginning June 1, 1933.
7. Appointment of delegates to the Annual Congress on Medical Education, Medical Licensure and Hospitals of the American Medical Association at Chicago, February 13 and 14, 1933.
8. Reports of the Treasurer and of the Auditing Committee.
9. Report of the Committee on Membership and Finance, on Finance.
10. Resolution as to a degree of rotation in office in membership of the Standing Committees, that was laid on the table at the last meeting.
11. Reports of Committee on State and National Legislation and of any Special Committees.
12. Incidental Business.

WALTER L. BURRAGE, *Secretary.*

Brookline, January 25, 1933.

Councilors are reminded to sign one of the attendance books previous to the meeting.

BOSTON MEDICAL LIBRARY

JEAN MARTIN CHARCOT

NOVEMBER 29, 1825-AUGUST 16, 1894

How many of us fail to make the most of our opportunities! The Salpêtrière, one of the public dumps for the physical wreckage of a great city, was probably not unlike many another institution devoted to the care of the "flotsam and jetsam" of society, who in the early stages of their incapacity drift from one free clinic to another and are finally segregated, at public expense, in a refuge that provides the bare physical necessities, and but little else, and over the doors of which might well be inscribed "Abandon all hope, ye who enter here." In such places, however, there is to be found the material, which, if properly utilized, may lead to the discovery of facts of the utmost importance to scientific medicine. The facilities for study in such places may be lacking in the refinements of modern research laboratories, but clinical and pathological investigations are still fruitful sources of information and the enquiring mind may yet bring to the surface much information not hitherto known or that has been misapplied. After several years of routine medical work Charcot was given his opportunity in an institution of this character and though, because of the wealth of neurological material always to be found in a place of this kind, he has been, perhaps, more widely known through his contributions in this field, still it would be unfair to ignore the fact that in general medical practice and in pathology he made the most of his opportunities. The glamour of chemistry, biology and physics, as interpreters of medical phenomena, has lured men away from the more prosaic subjects of clinical and pathological research. There are few to whom such opportunities are not open, whereas the scientific laboratory is not so easily or profitably entered, even by those having a native ability for that sort of investigation. The importance of studying one's cases, no matter how unpromising the material, never received more striking emphasis than in the career of Charcot.

He was born in Paris on the twenty-ninth of November, 1825. In his line, that of a coach builder, his father was an artist and for many years his creations of this sort were models for his fellow craftsmen. The artistic instincts possessed by his son were obviously of paternal origin. Coach manufacturing was not sufficiently lucrative to enable his father to provide all his children with equal educational opportunities, so he put it up to his sons that the one who was able to come through the school year with the greatest distinction should be granted the coveted advantage of a course at the Lycée St. Louis. This honor was won by Jean Martin. The other two went to the army and into

the father's business, respectively. Having completed his secondary education he was enrolled as a medical matriculant. In 1848 he became a hospital interne, receiving his doctor's degree after the presentation of his thesis in 1853. He partly supported himself throughout this period by giving private instruction. Rayer recognized in him a superior intellect and made him his chief of clinic from 1853-55. Knowing of Charcot's financial straits Rayer put a wealthy family in his charge and it was while attending them that he was enabled to remain for a considerable time in Italy where he devoted his spare hours to the study of art. In 1856 he became the physician to the Central Bureau, a sort of clearing house from which patients were distributed to appropriate hospitals, and four years later took examinations for the position of Professor on the Paris Faculty. Had it not been for the influence of his sponsor, Rayer, he probably would have failed, but his bibliographic knowledge and his ability to break down the arguments of those who opposed his thesis secured for him the prize he sought. Appointments to the Paris Faculty at that time were hard to secure, for competition was keen. It was on the occasion of his second trial that he was successful. In 1862, after this appointment to the Faculty, he was assigned to the Salpêtrière as Medical Chief and together with his friend Vulpian he proceeded to bring order out of the chaos that prevailed in that institution where 5000 patients were sheltered. The first task they undertook was to gather the histories of all the inmates and inaugurate a system for recording and properly filing them on entry, where they were accessible for reference. He found here an inexhaustible store of material. He always devoted the entire morning, and frequently more, to his duties at the Hospital. For every autopsy he dictated the findings, thus laying a foundation for that wide knowledge of pathology which was one of his most valuable acquisitions. From the early years of his connection with the Salpêtrière he sent communications to the Société de Biologie and to the Gazette Hebdomidaire in consequence of which he was quite favorably known before he started a course of lectures, in 1866, at the Salpêtrière. The nucleus of attendance upon these lectures was formed of his former internes, all of whom were exceedingly loyal to their chief. The subjects he chose were pneumonia in the aged, chronic rheumatism and gout. The next year he discussed paralysis agitans, cerebral hemorrhage and paresis. It was at this time that he became impressed with the value of the thermometer in studying the diseases of old age and did more than anyone had done before to popularize that instrument in France. He was an indefatigable worker, always prompt in meeting his engagements and exacting a like degree of punctuality in others. He gleaned the literature of his own and foreign countries, annotating and pasting the references into notebooks to the very end of his career. His familiarity with German and English enabled him to keep in touch with the literature in those languages, nor was he unwilling to give credit where credit was due in the case of foreigners with whose works he had become acquainted. In 1869-70 he first described the "Arthropathies of Ataxies" and in conjunction with Vulpian and Brown-Séquard founded the Archives de Physiologie. The Franco-Prussian War (1870) interrupted all scientific work for a time. It was, however, of short duration and in 1872 we find Charcot accepting appointment to the Chair of Pathological Anatomy on the Paris Faculty. This position he occupied until 1881 and during this period his lectures were chiefly concerned with the diseases of the lungs, kidney and liver together with localization in diseases of the brain and spinal cord. The work of the Professor of Pathology did not prevent his giving his usual clinical lectures at the Salpêtrière. In 1882 his hopes were realized and he was given the Chair in Clinical Neurology at the hospital where for so many years he had worked and built up so wide a circle of devoted disciples, admirers of his ability as a teacher, of his scientific acumen, of his capacity for work and of his general human qualities. Altogether Charcot's connection with the Salpêtrière extended over a period of 30 years. The later years, when his interests were more largely neurological because he was occupying a clinical staff assignment in that specialty, were the ones that have created the impression that he was solely a neurologist. It is probable that his neurological work was as good as it was because he had been wise enough to base it on so substantial a foundation in clinical medicine and pathology. Certain it is that a great deal of material was offered to the world from this clinic, either personal contributions of Charcot's or articles in collaboration with his pupils, as well as work that, though inspired by the master, was actually done by the pupil, no articles being sent to press without the master having been given opportunity to criticize their productions. His activities after 1882 were partially represented by his work on hypnotism, the organic diseases of the brain and spinal cord, the amyotrophies, aphasia, hysteria, word blindness, epilepsy, psychiatry and hysterotraumatism. Besides these there was a two volume series of lectures, delivered in 1887-88, entitled "Leçons du Mardi" and two other volumes covering his work from 1889 through 1891, entitled "Clinique des Maladies du système-nerveux." In the final count his published contributions would fill some fifteen volumes, a tremendous amount of work for any one man to have accomplished in a life cut short at sixty-nine. As his pupils became greater in numbers,

including as they did, many of the best minds the world over, he had many to draw from to relieve him from irritating detail. As a teacher he was beloved by the majority of those who sat at his feet, whether of his own people or outsiders. No man can escape criticism who ventures to depart somewhat from the conventional in his methods, and that is what Charcot did. In his effort to drive home the points he sought to make in his lectures he was dramatic. His lecture hall was like a stage; it had footlights, a spotlight and, an innovation for his day, a magic lantern. When his popularity as a lecturer became noised abroad and this lecture hall had to be enlarged to a seating capacity of from 500-600, it is small wonder that jealous critics or less popular rivals should have indulged in uncomplimentary remarks. He was accused of being a charlatan, of having no interest in his patients unless they presented some unusual situation, of being a hypnotist and of offering nothing in the way of treatment. Implications of this sort crop out to this day, for there are still some living who, having possibly experienced competition with him in practice have yielded to one of the ways, common to small minds, of venting their displeasure. The testimony of his devoted pupils universally negatives all such estimates of Charcot's character. Bourneville, Gilles de la Tourette, M. Allen Starr of New York, Douriac, Church and Henderson of Canada and Scotland, respectively, all controvert any such accusations. Not only were they untrue, but the spirit of the man would have been foreign to any such behavior.

His marriage brought to him a companionship which was very helpful in many ways, both material and spiritual. His home life was delightful and his broad interests made his weekly "at homes" one of the centers of social and artistic life in Paris, a rendezvous for many people whose acquaintance was much sought. He was something of an artist and had much critical ability, as was shown by the works of art with which he surrounded himself. His interest in music, though not so marked as in the plastic arts and painting, was a very real one. He had little fondness for the modern school of art at that time in the ascendant in Paris. As a speaker and writer his style was clear, concise and not often characterized by any of the tricks of the orator and never at the expense of the matter that he was seeking to bring before his audience.

His death, which occurred suddenly as the result of an anginal attack, when he was on a short holiday, removed from the scene of his activities an outstanding force in the medical life of his day, a man whose training through long years of preparation in the general field of medicine gave him the right to approach the subject of his especial interest with a background which would entitle him to be called a "specialist".

The list of the honors accorded him by scientific associations in all parts of the world is an impressive one, but too long to include here. One of the outstanding lessons to be learned from his life is the assurance that in clinical observation and pathological training lies the key to real success in many a specialized field of medicine.

MASSACHUSETTS LEGISLATIVE NOTES

HOUSE—NO. 106.

An Act relative to the Qualifications of Applicants for Registration as Qualified Physicians.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Section two of chapter one hundred and twelve of the General Laws is hereby amended by striking out, in the tenth and eleventh lines, the words "which gives a full four years' course of instruction of not less than thirty-six weeks in each year," and inserting in place thereof the words: —which is approved by the board,—so that the second sentence will read as follows:—Each applicant, who shall furnish the board with satisfactory proof that he is twenty-one or over and of good moral character, that he possesses the educational qualifications required for graduation from a public high school, and that he has received the degree of doctor of medicine, or its equivalent, either from a legally chartered medical school having the power to confer degrees in medicine, which is approved by the board, or from any legally chartered medical school having such power, if such applicant was, on March tenth, nineteen hundred and seventeen, a matriculant thereof, shall, upon payment of twenty-five dollars, be examined, and if found qualified by the board, be registered as a qualified physician and entitled to a certificate in testimony thereof, signed by the chairman and secretary.

SECTION 2. Nothing in this act shall apply to any applicant for registration as aforesaid, who at the time of the passage hereof is a student in a legally chartered medical school as described in section two of said chapter one hundred and twelve, but as to such applicant the provisions of said chapter one hundred and twelve in force prior to the passage of this act shall continue to apply.

The following bills, of interest to the medical profession, are before the Massachusetts Legislature:

S. 62 relative to the Exemption from Local Taxation of Institutions for the Treatment of Mental or Nervous Diseases.

SECTION 1. Paragraph (c) of clause Third of

section five of chapter fifty-nine of the General Laws, as appearing in the Tercentenary Edition thereof, is hereby amended by striking out, in the third and fourth lines of said paragraph, the words "or for the treatment of mental or nervous diseases"—so that said clause (c) will read as follows:—(c) Real or personal property of such an institution or corporation, occupied or used wholly or partly as or for an insane asylum, insane hospital, or institution for the insane, shall not be exempt unless at least one fourth of all property so occupied or used, wholly or partly, on the basis of valuation thereof, and one fourth of the income of all trust and other funds and property held for the benefit of such asylum, hospital or institution and not actually occupied or used by it for such purposes, is used and expended entirely for the treatment, board, lodging or other direct benefit of indigent insane persons, or indigent persons in need of treatment for mental diseases, as resident patients, without any charge therefor to such persons either directly or indirectly, except that such a benevolent or charitable institution or corporation conducting an insane asylum, insane hospital or institution for the insane to which persons adjudged insane by due process of law may be committed shall be exempt from taxation on personal property and buildings so occupied or used, but shall be subject to taxation on the fair cash value of the land owned by it and used for the purposes of such asylum, hospital or institution.

SECTION 2. This act shall take effect as of April, first, nineteen hundred and thirty-two.

H. 208 an act authorizing the Middlesex College of Medicine and Surgery, Inc., to confer the Degree of Doctor of Dental Medicine.

SECTION 1. The Middlesex College of Medicine and Surgery, Inc., a corporation incorporated under chapter twenty-eight of the acts of eighteen hundred and forty-nine under the name of the Worcester Medical Institution, and whose name was changed to its present one under General Law, December fifteen, nineteen hundred and fourteen, is hereby authorized to grant the degree of doctor of dental medicine to students properly accredited and recognized by a majority of its trustees, provided that the course of instruction furnished by the corporation shall occupy not less than four years of thirty-two weeks each.

SECTION 2. This act shall take effect upon its passage.

* * * * * *

The Department of Education respectfully recommends that the petition for the Middlesex College of Medicine and Surgery for authority to confer the degree of Doctor of Dental Medicine be not granted.

H. 209 an act authorizing the University of Massachusetts to grant the Usual University and College Degrees.

SECTION 1. The University of Massachusetts, Inc., a corporation organized under the General Laws of the commonwealth in nineteen hundred and seventeen, is hereby authorized to grant such honorary testimonials and confer such honors, degrees and diplomas as are granted or conferred by any university, college or seminary of learning in this commonwealth; and the diplomas so granted shall entitle the possessors to the immunities and privileges allowed by usage or statute to the possessors of like diplomas from any university, college or seminary of learning in this commonwealth; provided, that no such honors, degrees or diplomas shall be conferred, except by the vote of a majority of the trustees of said corporation.

SECTION 2. This act shall take effect upon its passage.

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The Department of Education respectfully recommends that the petition for the University of Massachusetts for authority to grant the usual university and college degrees be not granted.

HOUSE—NO. 151

An Act defining and relating to Narcotic Drugs, and to make Uniform the Law with Reference Thereto.

Chapter ninety-four of the General Laws is hereby amended by striking out sections one hundred and ninety-seven to two hundred and seventeen, inclusive, and inserting in place thereof the following new sections:—

Section 197. The following words and phrases, as used in this act, shall have the following meanings, unless the context otherwise requires:

(1) "Person" includes any corporation, association, copartnership, or one or more individuals.

(2) "Physician" means a person authorized by law to practice medicine in this commonwealth and any other person authorized by law to treat sick and injured human beings in this commonwealth and to use narcotic drugs in connection with such treatment.

(3) "Dentist" means a person authorized by law to practice dentistry within this commonwealth.

(4) "Veterinarian" means a person authorized by law to practice veterinary medicine in this commonwealth.

(5) "Manufacturer" means a person who by compounding, mixing, cultivating, growing, or other process, produces or prepares narcotic drugs but does not include an apothecary who compounds narcotic drugs to be sold or dispensed on prescriptions.

(6) "Wholesaler" means a person who supplies narcotic drugs that he himself has not produced nor prepared, on official written orders, but not on prescriptions.

(7) "Apothecary" means a licensed pharmacist as defined by the laws of this commonwealth and, where the context so requires, the owner of a store or other place of business where narcotic drugs are compounded or dispensed by a licensed pharmacist; but nothing in this act shall be con-

strued as conferring on a person who is not registered or licensed as a pharmacist any authority, right, or privilege, that is not granted to him by the pharmacy laws of this commonwealth.

(8) "Hospital" means an institution for the care and treatment of the sick and injured, approved by the department of public health as proper to be entrusted with the custody of narcotic drugs and the professional use of narcotic drugs under the direction of a physician, dentist, or veterinarian.

(9) "Laboratory" means a laboratory approved by the department of public health as proper to be entrusted with the custody of narcotic drugs and the use of narcotic drugs for scientific or medical purposes and for purposes of instruction.

(10) "Sale" includes barter, exchange, or gift, or offer therefor, and each such transaction made by any person, whether as principal, proprietor, agent, servant, or employee.

(11) "Coca leaves" includes cocaine and any compound, manufacture, salt, derivative, mixture, or preparation of coca leaves, except derivatives of coca leaves which do not contain cocaine, ecgonine, or substances from which cocaine or ecgonine may be synthesized or made.

(12) "Opium" includes morphine, codeine, and heroin, and any compound, manufacture, salt, derivative, mixture, or preparation of opium, but does not include apomorphine or any of its salts.

(13) "Cannabis" includes the following substances under whatever names they may be designated: (*a*) The dried flowering or fruiting tops of the pistillate plant Cannabis sativa L., from which the resin has not been extracted, (*b*) the resin extracted from such tops, and (*c*) every compound, manufacture, salt, derivative, mixture, or preparation of such resin, or of such tops from which the resin has not been extracted.

(14) "Narcotic drugs" means coca leaves, opium, cannabis, and every substance neither chemically nor physically distinguishable from them.

(15) "Federal narcotic laws" means the laws of the United States relating to opium, coca leaves, and other narcotic drugs.

(16) "Official written order" means an order written on a form provided for that purpose by the United States commissioner of narcotics, under the laws of the United States making provision therefor, if such order forms are authorized and required by the laws of the United States, and if no such order form is provided, then on an official form provided for that purpose by the department of public health.

(17) "Dispense" includes distribute, leave with, give away, dispose of, or deliver.

(18) "Registry number" means the number assigned to each person registered under the federal narcotic laws.

Section 198. It shall be unlawful for any person to manufacture, possess, have under his control, sell, prescribe, administer, dispense, or compound any narcotic drug, except as authorized in this act.

Section 199. No person shall manufacture, compound, mix, cultivate, grow, or by any other process, produce or prepare narcotic drugs, and no person as a wholesaler shall supply the same, without having first obtained a license so to do from the department of public health.

Section 200. No license shall be issued under the foregoing section unless and until the applicant therefor has furnished proof satisfactory to the department of public health:

(*a*) That the applicant is of good moral character or, if the applicant be an association or corporation, that the managing officers are of good moral character, and

(*b*) That the applicant is equipped as to land, buildings, and paraphernalia properly to carry on the business described in his application.

No license shall be granted to any person who has within five years been convicted of a wilful violation of any law of the United States, or of any state, relating to opium, coca leaves, or other narcotic drugs, or to any person who is a narcotic drug addict. The department of public health may suspend or revoke any license for cause. The department of public health shall have power to make rules and regulations adequately to carry into effect the duties herein imposed upon it. A fee of ten dollars shall be charged for the issuance of each such license.

Section 201. (1) A duly licensed manufacturer or wholesaler may sell and distribute narcotic drugs to any of the following persons, but only on official written orders:

(*a*) To a manufacturer, wholesaler, or apothecary.

(*b*) To a physician, dentist, or veterinarian.

(*c*) To a person in charge of a hospital, but only for use by or in that hospital.

(*d*) To a person in charge of a laboratory, but only for use in that laboratory for scientific and medical purposes.

(2) A duly licensed manufacturer or wholesaler may sell narcotic drugs to any of the following persons:

(*a*) On a special written order accompanied by a certificate of exemption, as required by the federal narcotic laws, to a person in the employ of the United States government or of any state, territorial, district, county, municipal, or insular government, purchasing, receiving, possessing, or dispensing narcotic drugs by reason of his official duties.

(*b*) To a master of a ship or a person in charge of any aircraft upon which no physician is regularly employed, for the actual medical needs of persons on board such ship or aircraft, when not in port; provided, however, such narcotic drugs shall be sold to the master of such ship or person in charge of such aircraft only in pursuance of a special order form approved by a commissioned medical officer or acting assistant surgeon of the United States public health service.

(*c*) To a person in a foreign country if the provisions of the federal narcotic laws are complied with.

(3) An official written order for any narcotic drug shall be signed in duplicate by the person giving said order or by his duly authorized agent. The original shall be presented to the person who sells or dispenses the narcotic drug or drugs named therein. In the event of the acceptance of such order by said person, each party to the transaction shall preserve his copy of such order for a period of two years in such a way as to be readily accessible for inspection by any public officer or employee engaged in the enforcement of this act. It shall be deemed a compliance with this subsection if the parties to the transaction have complied with the federal narcotic laws, respecting the requirements governing the use of order forms.

(4) Possession of or control of narcotic drugs obtained as authorized by this section shall be lawful if in the regular course of business, occupation, profession, employment, or duty of the possessor.

(5) A person in charge of a hospital or of a laboratory, or in the employ of this commonwealth or of any other state, or of any political subdivision thereof, and a master or other proper officer of a ship or aircraft, who obtains narcotic drugs under the provisions of this section or otherwise, shall not administer, nor dispense, nor otherwise use such drugs, within this commonwealth, except within the scope of his employment or official duty, and then only for scientific or medicinal purposes and subject to the provisions of this act.

Section 202. (1) An apothecary, in good faith, may sell and dispense narcotic drugs to any person upon a written prescription of a physician, dentist, or veterinarian, dated and signed by the person prescribing on the day when issued and bearing the full name and address of the patient for whom, or of the owner of the animal for which, the drug is dispensed, and the full name, address, and registry number under the federal narcotic laws of the person prescribing, if he is required by those laws to be so registered. If the prescription be for an animal, it shall state the species of animal for which the drug is prescribed. The person filling the prescription shall write the date of filling and his own signature on the face of the prescription. The prescription shall be retained on file by the proprietor of the pharmacy in which it is filled for a period of two years, so as to be readily accessible for inspection by any public officer or employee engaged in the enforcement of this act. The prescription shall not be refilled.

(2) The legal owner of any stock of narcotic drugs in a pharmacy, upon discontinuance of the dealing in said drugs, may sell said stock to a manufacturer, wholesaler, or apothecary, but only on an official written order.

(3) An apothecary, only upon an official written order, may sell to a physician, dentist, or veterinarian, in quantities not exceeding one ounce at any one time, aqueous or oleaginous solutions of which the content of narcotic drugs does not exceed a proportion greater than twenty per cent of the complete solution, to be used for medical purposes.

Section 203. (1) A physician or a dentist, in good faith and in the course of his professional practice only, may prescribe, administer, and dispense narcotic drugs, or he may cause the same to be administered by a nurse or interne under his direction and supervision.

(2) A veterinarian, in good faith and in the course of his professional practice only, and not for use by a human being, may prescribe, administer, and dispense narcotic drugs, and he may cause them to be administered by an assistant or orderly under his direction and supervision.

(3) Any person who has obtained from a physician, dentist, or veterinarian any narcotic drug for administration to a patient during the absence of such physician, dentist, or veterinarian, shall return to such physician, dentist, or veterinarian any unused portion of such drug, when it is no longer required by the patient.

Section 204. Except as otherwise in this act specifically provided, this act shall not apply to the following cases:

(1) Prescribing, administering, dispensing, or selling at retail, of any medicinal preparation that contains in one fluid ounce, or if a solid or semi-solid preparation, in one avoirdupois ounce, (*a*) not more than two grains of opium, (*b*) not more than one quarter of a grain of morphine or of any of its salts, (*c*) not more than one grain of codeine or of any of its salts, (*d*) not more than one eighth of a grain of heroin or of any of its salts, (*e*) not more than one half of a grain of extract of cannabis nor more than one half of a grain of any more potent derivative or preparation of cannabis; (*f*) and not more than one of the drugs named above in clauses (*a*), (*b*), (*c*), (*d*) and (*e*); or

(2) Prescribing, administering, dispensing, or selling at retail of liniments, ointments, and other preparations, that are susceptible of external use only and that certain narcotic drugs in such combinations as prevent their being readily extracted from such liniments, ointments, or preparations, except that this act shall apply to liniments, ointments, and other preparations, that contain coca leaves in any quantity or combination.

The exemptions authorized by this section shall be subject to the following conditions:

(*a*) No person shall prescribe, administer, dispense, or sell under the exemptions of this section, to any one person, or for the use of any one person or animal, any preparation or preparations included within this section, when he knows, or can by reasonable diligence ascertain, that such prescribing, administering, dispensing, or selling will provide the person to whom or for whose

use, or the owner of the animal for the use of which, such preparation is prescribed, administered, dispensed, or sold, within forty-eight consecutive hours, with more than four grains of opium, or more than one half grain of morphine or of any of its salts, or more than two grains of codeine or of any of its salts, or more than one quarter of a grain of heroin or of any of its salts, or will provide such person or the owner of such animal, within forty-eight consecutive hours, with more than one preparation exempted by this section from the operation of this act.

(*b*) The medicinal preparation, or the liniment, ointment, or other preparation susceptible of external use only, prescribed, administered, dispensed, or sold, shall contain, in addition to the narcotic drug in it, some drug or drugs conferring upon it medicinal qualities other than those possessed by the narcotic drug alone. Such preparation shall be prescribed, administered, dispensed, and sold in good faith as a medicine, and not for the purpose of evading the provisions of this act.

Nothing in this section shall be construed to limit the kind and quantity of any narcotic drug that may be prescribed, administered, dispensed, or sold, to any person or for the use of any person or animal, when it is prescribed, administered, dispensed, or sold, in compliance with the general provisions of this act.

Section 205. (1) Every physician, dentist, veterinarian, or other person who is authorized to administer or professionally use narcotic drugs, shall keep a record of such drugs received by him, and a record of all such drugs administered, dispensed, or professionally used by him otherwise than by prescription. It shall, however, be deemed a sufficient compliance with this subsection if any such person using small quantities of solutions or other preparations of such drugs for local application, shall keep a record of the quantity, character, and potency of such solutions or other preparations, purchased or made up by him, and of the dates when purchased or made up, without keeping a record of the amount of such solution or other preparation applied by him to individual patients; provided, however, that no record need be kept of narcotic drugs, administered, dispensed, or professionally used in the treatment of any one patient, when the amount administered, dispensed, or professionally used for that purpose does not exceed in any forty-eight consecutive hours, (*a*) four grains of opium, or (*b*) one half of a grain of morphine or any of its salts, or (*c*) two grains of codeine or of any of its salts, or (*d*) one fourth of a grain of heroin or of any of its salts, or (*e*) one grain of extract of cannabis or one grain of any more potent derivative or preparation of cannabis, or (*f*) a quantity of any other narcotic drug or any combination of narcotic drugs that does not exceed in pharmacologic potency any one of the drugs named above in the quantity stated.

(2) Manufacturers and wholesalers shall keep records of all narcotic drugs compounded, mixed, cultivated, grown, or by any other process produced or prepared, and of all narcotic drugs received and disposed of by them, in accordance with the provisions of subsection five of this section.

(3) Apothecaries shall keep records of all narcotic drugs received and disposed of by them, in accordance with the provisions of subsection five of this section.

(4) Every person who purchases for resale, or who sells narcotic drug preparations exempted by section two hundred and three of this act, shall keep a record showing the quantities and kinds thereof received and sold, or disposed of otherwise, in accordance with the provisions of subsection five of this section.

(5) The form of records shall be prescribed by the department of public health. The record of narcotic drugs received shall in every case show the date of receipt, the name and address of the person from whom received, and the kind and quantity of drugs received; the kind and quantity of narcotic drugs produced or removed from process of manufacture, and the date of such production or removal from process of manufacture; and the record shall in every case show the proportion of morphine, cocaine, or ecgonine contained in or producible from crude opium or coca leaves received or produced, and the proportion of resin contained in or producible from the dried flowering or fruiting tops of the pistillate plant Cannabis sativa L., from which the resin has not been extracted, received or produced. The record of all narcotic drugs sold, administered, dispensed, or otherwise disposed of, shall show the date of selling, administering, or dispensing, the name and address of the person to whom, or for whose use, or the owner and species of animal for which, the drugs were sold, administered or dispensed, and the kind and quantity of drugs. Every such record shall be kept for a period of two years from the date of the transaction recorded. The keeping of a record required by or under the federal narcotic laws, containing substantially the same information as is specified above, shall constitute compliance with this section, except that every such record shall contain a detailed list of narcotic drugs lost, destroyed, or stolen, if any, the kind and quantity of such drugs, and the date of the discovery of such loss, destruction, or theft.

Section 206. (1) Whenever a manufacturer sells or dispenses a narcotic drug, and whenever a wholesaler sells or dispenses a narcotic drug in a package prepared by him, he shall securely affix to each package in which that drug is contained a label showing in legible English the name and address of the vendor and the quantity, kind, and form of narcotic drug contained therein. No person, except an apothecary for the purpose of filling a prescription under this act, shall alter, deface, or remove any label so affixed.

(2) Whenever an apothecary sells or dispenses any narcotic drug on a prescription issued by a physician, dentist, or veterinarian, he shall affix to the container in which such drug is sold or dispensed, his own name, address, and registry number, or the name, address, and registry number of the apothecary for whom he is lawfully acting; the name and address of the patient or, if the patient is an animal, the name and address of the owner of the animal; the name, address, and registry number of the physician, dentist, or veterinarian, by whom the prescription was written; and such directions as may be stated on the prescription. No person shall alter, deface, or remove any label so affixed.

Section 207. A person to whom or for whose use any narcotic drug has been prescribed, sold, or dispensed, by a physician, dentist, apothecary, or other person authorized under the provisions of section two hundred and one of this act, and the owner of any animal for which any such drugs have been prescribed, sold, or dispensed, by a veterinarian, may lawfully possess it only in the container in which it was delivered to him by the person selling or dispensing the same.

Section 208. The provisions of this act restricting the possessing and having control of narcotic drugs shall not apply to common carriers or to warehousemen, while engaged in lawfully transporting or storing such drugs, or to any employee of the same acting within the scope of his employment; or to public officers or their employees in the performance of their official duties requiring possession or control of narcotic drugs; or to temporary incidental possession by employees or agents of persons lawfully entitled to possession, or by persons whose possession is for the purpose of aiding public officers in performing their official duties.

Section 209. Any store, shop, warehouse, dwelling house, building, vehicle, boat, aircraft, or any place whatever, which is resorted to by narcotic drug addicts for the purpose of using narcotic drugs or which is used for the illegal keeping or selling of the same, shall be deemed a common nuisance. No person shall keep or maintain such a common nuisance.

Section 210. If any person makes complaint under oath to a district court, or to a trial justice or justice of the peace authorized to issue warrants in criminal cases, that he has reason to believe that any narcotic drug, is kept or deposited by a person named therein in any store, shop, warehouse, dwelling house, building, vehicle, boat, aircraft, or any place whatever, such person being other than a licensed manufacturer or wholesaler, registered pharmacist, registered physician, registered dentist, registered nurse, or a duly authorized employee of the same, or a common carrier or warehouseman engaged in transporting or storing such drugs, such court or justice, if it appears that there is probable cause to believe that such complaint is true, shall issue a search warrant to a sheriff, deputy sheriff, city marshal, chief of police, deputy marshal, police officer or constable, commanding him to search the premises where it is alleged that any such drug is kept or deposited, and to seize and securely keep the same until final action, and to arrest the person in whose possession such drug is found, together with all persons present where such drug is found, and to return forthwith the warrant with his doings thereon, to a court or trial justice having jurisdiction in the city or town where said drug is alleged to be kept or deposited. It shall be unlawful for any person to be present at the place where and at a time when any of the aforesaid narcotic drugs are found.

Section 211. All narcotic drugs, the lawful possession of which is not established or the title to which cannot be ascertained, which shall have come into the custody of a peace officer, shall be forfeited. Upon such notice as the court or trial justice shall order, the court or trial justice having jurisdiction shall order such narcotic drugs forfeited and destroyed, except as in this section otherwise provided. A record of the place where said drugs were seized, of the kinds and quantities of drugs so destroyed, and of the time, place, and manner of destruction shall be kept, and a return under oath, reporting such destruction, shall be made to the court or trial justice and to the United States commissioner of narcotics, by the officer who destroys them.

(1) Upon written application by the commissioner of public health, the court or trial justice by whom the forfeiture of narcotic drugs has been decreed may order the delivery of any of them, except heroin and its salts and derivatives, to said commissioner of public health for distribution or destruction, as hereinafter provided.

(2) Upon application by any hospital within this state, not operated for private gain, the commissioner of public health may in his discretion deliver any narcotic drugs that have come into his custody by authority of this section to the applicant for medical use. The commissioner of public health may from time to time deliver excess stocks of such narcotic drugs to the United States commissioner for narcotics, or may destroy the same.

(3) The commissioner of public health shall keep a full and complete record of all drugs received and of all drugs disposed of, showing the exact kinds, quantities, and forms of such drugs; the persons from whom received and to whom delivered; by whose authority, received, delivered, or destroyed; and the dates of the receipt, disposal, or destruction, which record shall be open to inspection by all federal and state officers charged with the enforcement of federal and state narcotic laws.

Section 212. On the conviction of any person of the violation of any provision of this act, a copy

of the judgment and sentence, and of the opinion of the court or trial justice if any opinion be filed, shall be sent by the clerk of court, or by the trial justice, to the board or officer, if any, by whom the convicted defendant has been licensed or registered to practice his profession or carry on his business. On the conviction of any such person, the court may, in its discretion, suspend or revoke the license or registration of the convicted defendant to practice his profession or to carry on his business. On the application of any person whose license or registration has been suspended or revoked, and upon proper showing and for good cause, said board or officer may reinstate such license or registration.

Section 213. Prescriptions, orders, and records, required by this act, and stocks of narcotic drugs, shall be open for inspection only to federal, state, county and municipal officers, whose duty it is to enforce the laws of this commonwealth or of the United States relating to narcotic drugs. No officer having knowledge by virtue of his office of any such prescription, order, or record shall divulge such knowledge, except in connection with a prosecution or proceeding in a court or before a licensing or registration board or officer, to which prosecution or proceeding the person to whom such prescriptions, orders, or records relate is a party.

Section 214. (1) No person shall obtain or attempt to obtain a narcotic drug, or procure or attempt to procure the administration of a narcotic drug, (*a*) by fraud, deceit, misrepresentation, or subterfuge; or (*b*) by the forgery or alteration of a prescription or of any written order; or (*c*) by the concealment of a material fact; or (*d*) by the use of a false name or the giving of a false address.

(2) Information communicated to a physician in an effort unlawfully to procure a narcotic drug, or unlawfully to procure the administration of any such drug, shall not be deemed a privileged communication.

(3) No person shall wilfully make a false statement in any prescription, order, report, or record, required by this act.

(4) No person shall, for the purpose of obtaining a narcotic drug, falsely assume the title of, or represent himself to be, a manufacturer, wholesaler, apothecary, physician, dentist, veterinarian, or other authorized person.

(5) No person shall make or utter any false or forged prescription or any false or forged written order.

(6) No person shall affix any false or forged label to a package or receptacle containing narcotic drugs.

(7) The provisions of this section shall apply to all transactions relating to narcotic drugs under the provisions of section two hundred and four of this act, in the same way as they apply to transactions under all other sections.

Section 215. No person, not being a physician, dentist, nurse, or veterinarian registered under the laws of this commonwealth or of the state where he resides, or a registered embalmer, manufacturer or dealer in embalming supplies, wholesale druggist, manufacturing pharmacist, registered pharmacist, manufacturer of surgical instruments, official of any government having possession of the articles hereinafter mentioned by reason of his official duties, nurse acting under the direction of a physician or dentist, employee of an incorporated hospital acting under the direction of its superintendent or officer in immediate charge, or a carrier or messenger engaged in the transportation of such articles, or the holder of a permit issued under section two hundred and sixteen, shall have in his possession a hypodermic syringe, hypodermic needle, or any instrument adapted for the use of narcotic drugs by subcutaneous injection. No such syringe, needle, or instrument, shall be delivered or sold to, or exchanged with, or given to any person except a registered pharmacist, physician, dentist, veterinarian, registered embalmer, manufacturer or dealer in embalming supplies, wholesale druggist, manufacturing pharmacist, a nurse upon the written order of a physician or dentist, the holder of a permit issued under section two hundred and sixteen, or an employee of an incorporated hospital upon the written order of its superintendent or officer in immediate charge. A record shall be kept by the person selling such syringe, needle or instrument, which shall give the date of the sale, the name and address of the purchaser and a description of the instrument. This record shall at all times be open to inspection by the department of public health, the boards of registration in medicine, veterinary medicine, and pharmacy, the board of dental examiners, authorized agents of said departments and boards, and police authorities and police officers of towns.

Section 216. A registered physician may, subject to the rules and regulations of the board of registration in medicine, issue to a patient under his immediate charge a permit to have in possession any of the instruments specified in the preceding section. Such permits shall be issued upon blanks to be furnished by said board and any permit so issued may be revoked at any time by it.

Section 217. In any complaint, information, or indictment, and in any action or proceeding brought for the enforcement of any provision of this act, it shall not be necessary to negative any exception, excuse, proviso, or exemption, contained in this act, and the burden of proof of any such exemption, excuse, proviso, or exemption, shall be upon the defendant.

Section 217A. It is hereby made the duty of the department of public health, its officers, agents, inspectors, and representatives, and of all peace officers within this commonwealth, and of all county and district attorneys, to enforce all the provi-

sions of this act, except those specifically delegated, and to coöperate with all agencies charged with the enforcement of the laws of the United States, of this commonwealth, and of all other states, relating to narcotic drugs.

Section 217B. Any person violating any provision of this act shall, upon conviction, be punished, for the first offence, by a fine not exceeding one thousand dollars, or by imprisonment in the house of correction for not exceeding two and a half years, or by both such fine and imprisonment, and for any subsequent offence, by a fine not exceeding five thousand dollars, or by imprisonment in the state prison for not exceeding five years, or by both such fine and imprisonment.

Section 217C. No person shall be prosecuted for a violation of any provision of this act if such person has been acquitted or convicted under the federal narcotic laws of the same act or omission which, it is alleged, constitutes a violation of this act.

Section 217D. If any provision of this act or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of this act which can be given effect without the invalid provision or application, and to this end the provisions of this act are declared to be severable.

Section 217E. This act shall be so interpreted and construed as to effectuate its general purpose to make uniform the laws of those states which enact it.

Section 217F. This act may be cited as the Uniform Narcotic Drug Act.

MISCELLANY

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

The Hemorrhagic Diseases*

BY RALPH C. LARRABEE, M.D.

The circulatory system of the body — the heart and blood-vessels—has been compared to a system of pipes, in which water, propelled by a pump, passes out through certain pipes and returns to the pump through others. If a break, even a small one, occurs, it must be repaired or the water will leak away. In the body such leaks occur whenever one cuts oneself. Yet ordinary cuts soon stop bleeding. Only bad ones call for the surgeon. It is obvious that the body must be provided with a highly efficient mechanism for the control of everyday minor hemorrhages.

This mechanism is a complicated one, involving several steps. First, there is the tendency of the injured vessel to contract and pull back into the wound. Secondly, the platelets—the tiny "third corpuscles" of the blood—collect in sticky masses about the injury, behaving something like bran in a leaking auto radiator. Next a blood clot forms in the end of the opened artery or vein and acts as a plug. Finally the injury heals.

Now if anything goes wrong with any step in the process by which nature stops or endeavors to stop a hemorrhage, the loss of blood will be greater than normal. Even the surgeon finds himself at a disadvantage where nature's aid is withheld. To surmount the difficulty we must know where the natural process has slipped up. It may be in any one of the four steps mentioned, but in the group of so-called "hemorrhagic diseases" the trouble is usually either with the platelets or with one of the elements of clotting.

Let us first consider the platelets. These, in common with all the red corpuscles and most of the white corpuscles, are made in the marrow of the bones, which may be looked upon as a factory for the manufacture of blood-corpuscles. Sometimes there is a strike in the factory. If it involves only the platelet department, we have the disease known as hemorrhagic purpura. There are of course other kinds of purpura much more common and much less serious. Hemorrhagic purpura is a rather terrible disease. The patient is apt to bleed profusely from the gums and nose and from small cuts. Dangerous hemorrhages may occur in the internal organs. The loss of blood results in severe anemia, but in most cases it consists of slow continuous oozing and there is time for remedial measures. Transfusion of blood from a healthy person, repeated at short intervals, enables many patients to survive until the platelets reappear. In others the removal of the spleen may be required. There is nothing more striking in surgery than a successful removal of the spleen in this disease. In most cases the platelets promptly reappear and recovery is almost abrupt.

Unfortunately there are other diseases in which the lack of platelets is beyond our control. There is a rare condition known as aplastic anemia, in which not only the function of platelet-formation but also that of producing red and white corpuscles are depressed. It occurs in those exposed to radium, to benzol and certain other chemicals and sometimes as a result of certain drugs. Nearly all the patients die. Then there is leukemia. In its acute forms, bleeding from lack of platelets is perhaps the most distressing symptom. It is always fatal and it is not very rare. There are several other diseases in which the platelets are more or less decreased, but they rarely reach such a low point that serious hemorrhages ensue.

Let us turn next to the diseases in which the impairment is in the clotting of the blood. The most striking is hemophilia—"bleeder disease". It is not common, but there are several families of bleeders in Boston and other parts of New England. Here the trouble lies in a deficiency which

*Station WBZ, January 10, 1933, 4:15 P.M.

makes clotting a matter of hours instead of minutes. A cut which would normally cease to bleed in a few minutes continues in spite of ordinary measures of control. When a tooth is pulled or the patient gets a blow on the nose, similarly uncontrollable bleeding may ensue. One of the most disabling occurrences is hemorrhage into the joints, especially the knee. Blood does not appear on the surface, but the joint may be permanently damaged.

One of the most remarkable features of hemophilia is its heredity. We rarely if ever see it except in the male. On the other hand, it can be transmitted only through the female. In other words, a man does not transmit it to any of his children, but only to his male grandchildren—the sons of his daughters. The reason for this is now understood—but the limitations of this broadcast forbid further discussion.

Quite recently it has been assumed that since the disease does not occur in women, there must be something about the female sex-organs which prevents it. Efforts have therefore been made to treat it by administering extracts made from the ovaries of animals. While there are some favorable reports, most of those who have tried the method here in Boston have found it disappointing.

The best thing that we can now do for the hemophilic is to guard him carefully against injuries of all sorts, and, if he bleeds, be prepared for several vigorous transfusions. This will usually tide him over the immediate emergency, but its effects will be temporary, and he will be a bleeder as long as he lives.

Closely allied, in most cases, to hemophilia is a rather common condition known as hemorrhagic disease of the new-born. Some babies are born with deficient clotting power. The road by which we enter this world, though short, is crooked, narrow and bumpy, and few of us reach the cradle without a few jolts and bruises. If the blood-platelets and clotting mechanism are working normally these injuries are usually taken care of. If they are not, the baby may bleed dangerously. Fortunately the deficiency usually lasts but a few days, and, if we can tide the baby over those days, he (or she, for this disease affects both sexes) remains well. This can generally be accomplished by drawing an ounce or so of blood from the father's veins and injecting it deeply under the baby's skin.

There are some other conditions in which the clotting of the blood may be deficient to such an extent that hemorrhage occurs. For example, in long-continued jaundice due to obstruction of the common bile-duct, the surgeon is sometimes embarrassed and the patient's life endangered by severe hemorrhage at operation or afterward. The trouble is due to deficient clotting from lack of lime in a form available for clot-formation. By administering lime salts, or if necessary by transfusion, the trouble can generally be remedied.

There are many other diseases in which bleeding is apt to occur. In some, like cancer, tuberculosis, or ulcer of the stomach, the reason is no more mysterious than in a bad cut; blood-vessels are eroded and opened by the progress of the disease. In others, like aneurysms, the walls of the vessels are diseased so that they rupture easily. In still others, such as scurvy, the capillary walls seem to become more permeable than normal. The treatment will vary with the causative disease.

As a whole the hemorrhagic diseases proper, those in which the trouble lies in the blood itself, are fortunately rather uncommon. In order to understand them and to treat them properly, a considerable amount of technical knowledge is demanded. If this is available, most of them can be managed with considerable success.

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The Conference Board of the National Institute of Health is an unofficial, voluntary organization of public-spirited men whose aim is to assist the Public Health Service, through the National Institute of

*Deceased

Health, to perform its noble work in the conservation of public health.

It is the mission of this Board to inform the people of America of the accomplishments of the Public Health Service in the past, and to point the way to its increased activities and greater service in the future aided by larger resources.

The Conference Board does not solicit or accept subscriptions. The expense of its operations has been provided by generous philanthropists. Its sole purpose is to make known the aims and aspirations of the National Institute of Health, which is attempting to conquer disease and give longer life and more happiness to all men. Sums given to the Institute—little or big, from the widow's mite to the large gifts of the rich—must be sent direct to the Treasurer of the United States, Washington, D. C., and marked "Gift to National Institute of Health." Funds so contributed will then be expended by the Government as desired by the donors. *The legal restrictions thrown around such expenditures assure donors that their contributions will be devoted to the purpose intended without the deduction of one cent for commissions or overhead.*

THE NATIONAL INSTITUTE OF HEALTH

The National Institute of Health is the research center of the Public Health Service. Its duty is to study the cause, prevention and cure of every disease of man. It plans to bring together in its battle against disease, in close coöperation under one directing head, representatives of every branch of science connected with plant life and animal life.

Coming into existence as a small clinical laboratory in New York in 1887 it was later transferred to Washington, and in 1901 Congress passed an act establishing it as a separate institution, under the Public Health Service, known as the Hygienic Laboratory. It was charged with the "investigation of infectious and contagious diseases and matters pertaining to the public health," and though the financial support given it was small, its scientists made extremely valuable discoveries concerning diseases such as malaria, pellagra, hookworm, tularaemia, undulant fever, psittacosis (parrot fever), typhus and Rocky Mountain spotted fever; the standardization of drugs; and fundamental chemical problems.

The scope of the Hygienic Laboratory was greatly widened and its name changed to the National Institute of Health by the statute of May 26, 1930. This act gives to the Institute the property, equipment and scientific organization of the former Hygienic Laboratory and $750,000 for the construction of additional buildings. This act of Congress authorizes the Secretary of the Treasury to accept gifts for the general work of the Institute and for the establishment of fellowships in scientific research. It provides that the name of anyone who donates as much as $500,000 will be perpetuated in some proper way. Additional appropriations will be made from time to time by Congress, but a much needed impetus to the elaborate and expensive work of the Institute can be given by liberal donations from the public.

People of means cannot make wiser disposition of a portion of their wealth during their lives or by last will and testament, when life's journey is ended, than to give generously to the National Institute of Health. By so doing they will become real benefactors to humanity and help to remove some of the great unrest now prevalent in the world.

THE PUBLIC HEALTH SERVICE

The Public Health Service has done excellent work since its creation in 1798. Its record has been one of marked success in many lines of activity. It has the confidence of the American public, and the medical profession. To illustrate, its qualities of leadership were displayed strikingly in the great fight against bubonic plague at San Francisco; also at New Orleans over 15 years ago, when the latter city was ratproofed at a cost of several millions of dollars, with the result that never since has bubonic plague threatened the health of our people.

In 1905, during the last great outbreak of yellow fever in the United States, the Public Health Service conducted a memorable battle against that dread disease, drove it out of the country, and educated the people so thoroughly on preventive measures that the nation has been free ever since of yellow fever.

The record of the Public Health Service for 133 years demonstrates beyond question that funds entrusted to it will be wisely administered.

PRIVATE DONATIONS TO THE GOVERNMENT

The most striking instance where private funds have been given to the Federal Government is the Smithsonian Institution, which was brought into existence by the $550,000 gift of James Smithson. No scientific institution has greater accomplishments to its credit than the Smithsonian, and it probably would never have existed but for this generous donation. The Government certainly has handled that fund in the wisest and best manner.

The Library of Congress has been authorized recently to accept donations from private sources. Funds aggregating $2,600,000 have been received by it, which are being expended with great benefit to the public.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR DECEMBER, 1932

Scarlet fever and chicken pox are the only diseases which have been more prevalent than usual during this month.

The number of cases of diphtheria has continued to decrease, this being the tenth month in 1932 in which a new low for the month was established.

Anterior poliomyelitis has also been making new low records.

Typhoid fever and tuberculosis (both pulmonary and other forms) are considerably lower than is usual for this season of the year.

Measles and German measles have not increased so rapidly as they usually do for this month.

Lobar pneumonia, whooping cough, mumps, influenza and epidemic cerebrospinal meningitis were reported about the number of times expected.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Population				Case Rates per 100,000 Population		
	December 1932	December 1931	Prosodemic Index*	Epidemic Index†	December 1932	December 1931	Expected Rates‡
All Causes	7404	7803	—	—	172.3	182.5	—
Anterior Poliomyelitis	3	19	21	.1	.1	.2	.5
Diphtheria	156	260	460	.3	3.6	6.1	10.7
Epidemic Cerebrospinal Meningitis	6	8	7	.8	.1	.2	.2
Measles	519	1230	1890	.3	12.1	28.8	44.0
Pneumonia Lobar	373	355	408	.9	8.7	8.3	9.5
Scarlet Fever	1527	1496	1168	1.3	35.5	35.0	27.2
Tuberculosis Pulmonary	305	310	316	.9	7.1	7.2	7.3
Typhoid Fever	17	31	17	1.0	.4	.7	.4
Whooping Cough	669	727	1006	.6	15.6	17.0	23.4
Chicken Pox	1700	912	—	—	39.6	21.3	—
German Measles	28	59	—	—	.6	1.4	—
Gonorrhea	613	585	—	—	14.3	13.7	—
Influenza	79	31	—	—	1.8	.7	—
Mumps	528	745	—	—	12.3	17.4	—
Syphilis	369	491	—	—	8.6	11.5	—
Tuberculosis Other Forms	25	36	—	—	.6	.8	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus 2.0 would indicate twice the expected number, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal.*

‡Calculated from the Prosodemic Index.

RARE DISEASES

Anterior poliomyelitis was reported from Cambridge, 1; Malden, 1; Somerville, 1; Total, 3.

Dysentery was reported from Chelsea, 1; Danvers, 1; Medfield, 1; Total, 3.

Encephalitis lethargica was reported from Malden, 1; Northampton, 1; Total, 2.

Epidemic cerebrospinal meningitis was reported from Boston, 2; Cambridge, 1; Fairhaven, 1; Lowell, 1; Maynard, 1; Total, 6.

Malaria (therapeutic) was reported from Medfield, 1; Total, 1.

Septic sore throat was reported from Amesbury, 3; Arlington, 1; Boston, 7; Chicopee, 1; Lowell, 1; Lynn, 4; Natick, 1; Northampton, 1; Northfield, 2; Quincy, 1; Total, 22.

Tetanus was reported from Peabody, 1.

Undulant fever was reported from Montague, 1.

THE PATHOLOGIST'S DUTY IN OBTAINING PERMISSION FOR AUTOPSIES

In the *Bulletin of the Massachusetts Department of Mental Diseases**, Dr. William Freeman of the Worcester State Hospital sets forth his conception of the duty of the pathologist in obtaining permission for autopsies. The arguments are as follows:

"The hospital pathologist who concerns himself with only the performance and diagnoses of such autopsies as are requested is shirking a very important part of his duty. Unless he takes an active part and interest in methods of stimulating an increase in the number of autopsies he hinders the scientific advancement of the staff and institution which he serves. The need and value of larger necropsy percentages have been well shown by many leaders in the medical profession. Waite believes that 'All roads in medicine either emanate from or lead to the postmortem table.' Christian stated, 'Any hospital service is incomplete without a check-up of the clinical diagnoses in those cases that are fatal.—The autopsy number and percentage is the best single index of the professional efficiency of a hospital.' The latter statement is undoubtedly stretching the point a good deal. A more conservative attitude would be to the effect that the autopsy percentage is one of the best indices of the scientific attitude of a hospital. Bluestone was more emphatic. 'No hospital is larger than its pathological laboratory.

*Pathological Number, Vol. 16, Nos. 1 and 2, April, 1932.

The progressiveness of a hospital is in direct ratio to the laboratory-spirit which it maintains.' This 'laboratory-spirit' must essentially emanate from the pathologist for Bell states, 'The pathologist *must* make the physician *want* to see an autopsy on the clinical cases that die.'"

If the autopsy is regarded as such a valuable adjunct in the study and knowledge of disease processes and the pathologist is supposedly a leader in this study why, then, should he regard the efforts to increase the number of these studies as a purely administrative and clinical problem and leave that work to others?

The pathologist must incur and maintain the good-will and confidence of all members of the hospital staff: internes, house officers, residents, visiting and consulting staff alike. These clinicians are the ones who will, in the end, ask permission for autopsy from the bereaved ones, even beg for it at times. It appears hardly logical to suppose that any human being (and the clinician is no more than human) will force himself to face such situations to supply the necessary work for one whom he dislikes. With an existing feeling of good-will the physician will feel a personal interest to obtain this essential examination in every possible case.

The pathologist should encourage the clinical staff to view every patient who is dangerously ill as a possible subject for postmortem examination. Keeping this possibility in mind the attending staff can mold the feelings of the relatives while the patient is still living so that they (the relatives) will feel a return obligation to grant requests that the staff asks of them. There are many excellent papers containing valuable suggestions for use in the development of this "consent psychology" on the part of relatives. It is not the intended scope of this paper to discuss this important phase in gaining permission for autopsies but a partial list of the more important articles is worthy of reference. Bluestone, Bell, Gordon, Tarr, Warwick, Boyd and Gordon, Parkhurst and Charache have written papers which are recommended to pathologists and clinicians alike for their valuable aids and suggestions. Religious misbeliefs form an important subject in the refusal of permission for autopsy and such objections are cited by Joslin, Gottlieb, and Lauterbach.

Clinico-pathological conferences are an excellent method of stimulating the staff to *want* to see autopsies on their cases that die and verify the clinical diagnosis. The pathologist should urge them. This institution holds such a conference each month. At the meeting, one case is presented as a problem by the staff who treated the patient. The remainder of the staff discusses it from the psychiatric, medical and therapeutic viewpoints and the pathologist engages in the discussion of the necropsy findings.

The relatives in nearly every instance wish to share in the knowledge of the findings and diagnoses of the examination. It is much easier to obtain a request for an examination from individuals who know beforehand that they will be told of the causes of death. Without this the relatives consent only on the argument of "assisting science" which is a very impersonal and lofty one.

In addition Dr. Freeman gives directions for performing autopsies which can be read with profit by those without large experience. Practitioners should read this article because the facts and arguments presented may be of service on appropriate occasions.

A REPORT ON THE NATIONAL COMMITTEE ON MENTAL HYGIENE

Dr. George W. Pratt, psychiatrist, has submitted a report to the National Committee on Mental Hygiene dealing with the deviations from the normal of people suffering by reason of the depression. This pamphlet, which has been prepared for the guidance of social workers, unemployment relief workers and others, sets forth that there are from 6,000,000 to 9,000,000 persons in the United States who display some signs of mental disorder but not of that degree which warrants the designation of insanity. Many of these people, although often trouble makers and hard to get along with, are not thought of by their fellow citizens as mentally ill, yet their condition seems to be intensified by reason of the financial depression which is so general throughout the country. Even with this in mind Dr. Pratt believes that the depression is not without its beneficial results, because it is forcing people to create new and probably more enduring values and standards of what constitutes happiness and satisfaction, and teaching them that happiness is to be found in simple inexpensive pleasures as much as in those which, in more plentiful years, they could purchase.

He sees in the plight of thousands of the new rich very many new problems affecting the mental hygiene of people of this class.

He then goes on to consider the problem of juvenile delinquency throughout the country, which he believes has been decreasing, but whether this is the result of the fact that unemployed fathers are spending more time with their children at home has not been determined.

During the depression the "white collar" class, so-called, has lost its status and appears to suffer especially because of the disturbances of morale resulting from the panic due to the difficulty of finding remunerative employment. He feels that there is an appallingly large percentage of grown men and women who fall into the emotionally immature class who are dependent upon others in the face of disappointment, and social agencies dealing with such individuals must not only take

over their responsibilities but do their thinking for them.

Dr. Pratt believes that the use of alcohol and narcotic drugs has increased to some extent among the people who look for some relief from their anxieties.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1931 AND SEVEN YEAR AVERAGE

MONTH ENDING JANUARY 7, 1933

Diseases	Week ending Dec. 17, 1932	Week ending Dec. 24, 1932	Week ending Dec. 31, 1932	Week ending Jan. 7, 1933	Average cases reported for week corresponding to Jan. 7 for past seven years	Week ending Dec. 19, 1931	Week ending Dec. 26, 1931	Week ending Jan. 2, 1932	Week ending Jan. 9, 1932
Anthrax	—	—	1	—	—	—	—	—	—
Cerebrospinal Men.	—	1	—	2	1	3	1	—	1
Chicken Pox	83	191	73	164	151	126	80	89	178
Conjunctivitis Inf.	—	7	—	1	4	—	—	—	—
Diphtheria	5	15	6	14	28	9	8	5	9
Encephalitis Epid.	—	—	—	1	—	1	—	—	—
German Measles	1	1	—	—	18	5	4	1	3
Influenza	13	24	96	89	305	8	5	2	9
Measles	13	18	27	84	166	67	58	61	104
Mumps	61	52	25	73	54	38	28	49	74
Paratyphoid Fever	2	1	—	—	—	1	2	—	2
Pneumonia (Broncho)	28	46	42	50	46	23	11	33	52
Pneumonia (Lobar)	41	50	32	58	55	42	24	52	72
Poliomyelitis	—	1	—	—	—	—	1	—	2
Scarlet Fever	63	83	110	91	77	58	57	65	79
Septic Sore Throat	—	—	2	—	3	3	9	1	2
Smallpox	—	13	6	—	4	32	12	2	15
Trichinosis	—	3	2	—	—	2	—	—	1
Tuberculosis (Pul.)	20	26	22	26	27	17	20	40	24
Tuberculosis (O. F.)	—	7	4	1	3	3	3	6	4
Typhoid Fever	2	2	—	—	—	4	1	2	—
Undulant Fever	—	1	—	1	—	1	—	—	—
Whooping Cough	39	94	75	100	67	59	39	53	101
Gonorrhea	14	17	19	16	26	46	23	37	34
Syphilis	34	29	36	35	32	46	24	57	29

Remarks: No cases of Asiatic cholera, glanders, plague, or yellow fever during the past seven years.

CORRESPONDENCE

THE RUSSIAN *MOUJIKS* AND THEIR DOCTOR

Mr. Editor:

The following is from "An Ambassador's Memoirs," Maurice Paléologue (George H. Doran Co., New York, fifth edition):

"When there are epidemics the suspicions of the peasants are invariably turned against the doctor, who, in their eyes is the agent of the authorities. 'Why does he use incomprehensible words? Why these unfathomable and strange actions? Who can doubt that he it is who spreads cholera; he is poisoning the poor *Moujiks* by order of the Government!' And away they go and burn the hospital, smash up the laboratory, and insult or beat the doctor, sometimes even kill him!

"In this respect the novelist Veressaiev, always a model of accuracy in his description of Russian life, has not exaggerated in the least, in his story of the heart-breaking experiences of Dr. Tchekianov. The doctor, a youthful enthusiast who is obsessed by a desire to be of service to the poor, exhausts himself in prodigies of self-sacrifice during an epidemic of cholera. But that does not prevent him being regarded as a poisoner by the ignorant brutes he is sent to help; insulted, abused, and ultimately half beaten to death.

"On his bed of pain he reflects bitterly. But instead of bearing his torturers any ill-will, he feels infinite pity for them and writes in his diary: 'I have been beaten! Beaten like a mad dog because I came to help them and devoted all my knowledge and strength to them.'

" 'Only to-day I realize how much I love them. I have not succeeded in winning their confidence. I had almost brought them to believe in me; a few glasses of vodka were enough to thrust them back into their mental darkness and reawaken their primitive savage instincts. And now I feel I am going to die. But why have I struggled? In what cause am I dying? Obviously all this was inevitable.'

" 'The *moujiks* have always regarded us simply as strangers. We despised and avoided them. We never tried to know them. A terrifying abyss separated us from them.' "

The French Ambassador left Russia at the beginning of the Revolution, and his description and that of the novelist refer to Russia before the great upheaval. It would be interesting to hear from someone who knows the present Russia well, as to the character and enlightenment of the *moujiks* under the new régime.

Very truly yours,

WILLIAM PEARCE COUES, M.D.

January 12, 1933.

VISION TESTS IN THE PUBLIC SCHOOLS OF BEVERLY, MASSACHUSETTS

City of Beverly
School Department

Beverly, Massachusetts,
January 13, 1933.

Editor,
The *New England Journal of Medicine*,

I am enclosing a report of the vision tests as carried out in the Beverly Public Schools. I am hoping that you will find it of enough general interest to warrant its publication.

Personally I would like to see the problems of medical school inspection discussed more frequently in the *Journal*.

Very truly yours,

WHITMAN G. STICKNEY, *School Physician*.

VISION TESTS IN THE PUBLIC SCHOOLS

Whether the human eye is breaking down under present-day conditions will, in all probability, remain an academic question for many years to come. One thing is certain, the people are becoming vision conscious and are having more corrections made than formerly. This must be due in part to the prevalent custom of testing the vision of our school children. Our public schools furnish the largest and most interesting child clinic extant and the problems in this clinic stand as a challenge to the keenest minds in the medical profession. Theoretically, our compulsory school laws require every child between certain ages to attend school if physically or mentally able. Thus the burden of responsibility for their physical welfare during these formative years is laid directly at the door of the school authorities.

Perhaps first among the many health problems to be met is the preservation of normal vision and the conservation of deficient vision. The almost universal custom of requiring the teachers to make the vision tests is good so far as it goes, provided it is done properly. This method, however, has its limitations and offers many opportunities for errors.

In 1926 an experimental plan was tried out in Beverly in the hope that it might eliminate the inaccuracies and uncertainties of the older method. The plan fulfilled all expectations and has now become a permanent feature in our health work. As soon as possible after the schools open in September every child in the first grade is given a routine ophthalmoscopic examination. The results, normal or abnormal, are entered on the standard (Massachusetts) physical record cards, the defects being roughly graded. In addition, all other children in the schools who are wearing glasses or who have appreciable defects not previously requiring correction are rechecked. The examinations are made by an ophthalmologist who is engaged in private practice and who has hospital affiliations in his specialty. A small room in each building was easily adapted to this work. The required equipment is simple and inexpensive. The examiner is assisted by the nurse and a clerk. If necessary, a teacher and an upper grade girl could act as assistants. After the work is well organized, about fifty-five examinations per hour can be made. Where correction is needed the parents are notified and the usual follow-up work is done by the school nurses.

As there is no local eye clinic, our corrective work among the needy children was much handicapped until the Y. M. C. A. and "Y's Men" came to our rescue. A room in the Y. M. C. A. building is at our disposal and the "Y's Men" take care of the expense of refraction. This clinic, while not officially supported by the school department, is directly under control as all details are attended to by the school nurses, and the school ophthalmologist does the refraction work.

After this plan was working smoothly, a comparison with the old method was made. The records of 3,218 pupils were reviewed. The earliest of these included the September examination for 1915 and the latest the High School graduates of 1931. These records were the results of examinations made by a large number of individual teachers. A large percentage of the pupils had an annual examination throughout both grade and high schools. Owing to the great number of teachers involved and the unequal lighting of the various schoolrooms, it was expected that there would be some discrepancies in the records but we were totally unprepared for the actual disclosures. Brief-

ly, the survey showed that twenty per cent of the cards recorded findings that were absolutely worthless. Apparently many eyes in this particular group were cavorting without rhyme or reason from normal to 20/40 or 20/50. Fifty-nine per cent of the whole number (3,218) showed an erratic deviation from normal through the various stages to 20/50. An occasional report of 20/30 is of little importance as this can be attributed to poor lighting, haste, or carelessness. However, when ten per cent show an irregular deviation from normal to 20/40 and nine per cent show a varying range from normal to 20/50, something must be decidedly wrong.

The fault lies with the system and not with the individual teachers. An experienced demonstrator has stated that a proper chart examination of a forty pupil lower grade room would require an entire forenoon. Few school departments have taken the trouble to provide properly lighted charts and the proper instruction for the teachers, or have allowed time for the necessarily unhurried examination. It is true that no extra appropriation is required where the teachers do this work, yet it does cost the taxpayers something when an instructor lays aside her teaching program and assumes the duties of a physician. In one school of 1,222 pupils, fifty-one teachers suspended their regular work for two whole periods. A simple problem in arithmetic showed that one hundred and forty-five dollars' worth of teaching time was spent in this examination. There are many other objections to the teacher-chart method. The instructor who makes only forty or fifty tests per year can never become proficient in this important duty, and the more individual examiners involved, the more the "human element" enters into the picture. Often the waiting pupils memorize the chart and glibly recite the lesson when their turn comes. This method cannot be used successfully with the youngest children unless a great deal of time is spent with each pupil. By far the most serious objection to the chart method is the fact that even in the hands of a specialist, it fails to detect nearly fifty per cent of the minor defects. These missed cases create a sense of false security on the part of the parents. They know that the tests have been made and in the absence of a notice assume that their children's eyes are normal. The borderline cases and the slight deviations from normal are very often potential eye strains. It is important that they be detected early and carefully watched for any breakdown. Finally, the duties of a teacher include no part of any routine physical examination.

Our Beverly plan eliminates nearly all the defects of the teacher-chart method. It is much more rapid. It is applicable to the youngest child as all the coöperation required of the pupil is to sit quietly on a stool and look at some object held by the assistant.

Best of all the results are accurate and the "human element" is reduced to its lowest denomination when one person is made responsible for the work. The expense, which need not be prohibitive, is justified when the accuracy of results and the importance of the work are considered.

SUMMARY

The teacher-chart method for vision tests in the public schools, as generally carried out, is unreliable because the work is hurried, facilities are inadequate, the examiners do not have experience enough to become adept, time consuming when properly done, is not adapted to the younger children and fosters a dangerous sense of security because so many potential cases of eye strain are not detected until they become far advanced.

The Beverly plan is rapid, accurate, applicable to all ages, detects minor and borderline cases, keeps track of all cases where correction has been done, follows the minor defects from year to year and does not require elaborate equipment or expensive alteration of special rooms.

This opinion is based upon six years of practical experience with the plan.

MOTOR VEHICLE ACCIDENT PROBLEMS

To the Editor:

Dr. Slocombe's article on "The Scientific Method in Motor Vehicle Administration" is of interest to all who have not yet become quite indifferent to the appalling loss of life, and the frightful injuries from motor car accidents.

So far as this loss of life and these accidents relate to pedestrians:—

How about applying common sense instead of "science" and separate the two forms of traffic? The expense involved in these accidents has been estimated as fifteen thousand millions of dollars yearly in this country.

It is obvious that accidents to pedestrians can not be stopped until pedestrians are excluded from the motor ways.

I believe we have sufficiently competent engineering talent to devise practical ways of doing it, and that much of the present loss of life (50 to 70% of it) could thus be prevented, and it might not cost more than it does to kill and injure them.

FRANK M. SHERMAN, M.D.

11 Fairview Terrace,
West Newton, Mass.

A QUESTION RESPECTING THE TECHNIC OF CAESAREAN SECTIONS

Managing Editor,
New England Journal of Medicine,

I think a mistake was made in quoting Dr. Barton Cooke Hirst of Philadelphia as saying at the dinner of the New England Obstetrical and Gynecological Society, "Caesarean sections were done during the first five years of his practice by transfixing the cervix with two skewers, etc." I under-

stood him to say that hysterectomies and Caesarean sections were so treated.

He graduated in 1883 and it was in 1881 or 1882 that Lawson Tait of Birmingham, England, developed his very ingenious clamp to be used in hysterectomies. The clamp encircled the cervix as low down as possible and was supported in place by two skewers run through the cervix under it. The skewers rested on hard rubber plates placed on either side of the incision.

All my first hysterectomies were done in this way. The operation took but a short time and usually convalescence was surprisingly uneventful.

As soon as it was found that a clean stump could be dropped, Dr. Samuel Mixter brought out his clamp.

The advantage of this clamp was that it shut off all bleeding from the uterine arteries while you were ligating them.

Very truly yours,

FREDERICK W. JOHNSON, M.D.

January 13, 1933.

EDITOR'S NOTE: The report of Dr. Hirst's remarks was submitted to him and approved as written.

THE URINARY DIFFICULTIES OF JEAN JACQUES ROUSSEAU

Mr. Editor:

Jean Jacques was born at Geneva on June 28, 1712. Some days after his birth his mother died of puerperal fever.

Josephson in his "Jean Jacques Rousseau" (Harcourt, Brace and Co., N. Y., 1931) tells us of a severe chronic trouble which affected Rousseau and apparently began in the summer of 1748. Rousseau described it as "a cruel and humiliating malady".

Josephson says that "without shortening his life as he feared it would, it turned it into an interval of sheer tormenting pain. He was really a most hardy person. He had walked thousands of miles, borne hunger and cold. Illnesses he had had, influenza and such things which had even affected slightly his hearing, and most definitely, his imagination of a hypochondriac, and his nerves from the beginning had been highly organized".

"Now he experienced severe colics, fever, perspiration, and burning pains, 'retention of the urine', and all other discomforting symptoms of congestion of the urethra. This malady clung to him all of his life, since little was then known of its cure."

We are told that "in 1750 he again fell ill of his internal disorder and that he had suffered agony for long weeks. Two celebrated surgeons were sent to him by his rich friends, Josephson relates, and one of them, Morand, gave him only six months to live". "Fever and pain chained him to his bed."

This severe illness seemed to have been a great factor in the philosopher's change of life and habits. He says, "I renounce forever all plans for fortune and advancement."

In a note on Rousseau's maladies (appendix B) Josephson says that "Rousseau's prostatic disorder has been diagnosed by modern physicians . . . as a congestion of the trigone with the characteristic accompaniment of frequent, incomplete, and painful urination, severe colic and fever."

Rousseau first experienced urinary difficulty in 1748 when he was thirty-six years of age—young for prostatic trouble other than an acute affair of Neisserian origin. "Severe colics, fever, and burning pain, and retention of urine" were some of the symptoms he had when the illness first began. In December, 1750, he "suffered agony for long weeks".

From the description given of Rousseau's malady, it would seem quite possible that the immortal author of the "Confessions," and "La Nouvelle Héloise" suffered from an intermittent urinary infection, back of which might well have been lithiasis at some point in the urinary tract.

Very truly yours,

WILLIAM PEARCE COUES, M.D.

January 6, 1933.

RECENT DEATHS

REPORT OF THE COMMITTEE ON THE DEATH OF FRED STEVENS SMITH, M.D.

FRED STEVENS SMITH, M.D., of 5 Third Street, North Andover, was born May 6, 1870, the son of George I. and Laura A. (Stevens) Smith, in that town, and died of heart disease upon the site of the house in which he was born, on November 2, 1932, at the age of 62 years. His own knowledge of his cardiac disability had caused him to limit his practice for the six years preceding his demise.

As a boy he attended the public schools of his town and was graduated from Johnson High School with the class of 1888. Next he spent three years at Phillips Academy, Andover, and was graduated in 1891, going from there to Harvard University Medical School, and received his degree in 1895. His registration to practice medicine was dated 1896, and he was one of that small class which received their license under a law, which was in force for a short period, and which allowed applicants who were recent graduates of Massachusetts Medical Schools to present their diplomas as all the credentials necessary.

Succeeding the late Dr. Frank E. Weil, he opened practice across the street from his home. Fellowship in the Massachusetts Medical Society was taken in 1895 and Fellowship in the American Medical Association later. On January 22, 1907, his marriage to Helen L. Josselyn occurred, and at his death, his wife and two daughters survived, the Misses Jocelyn and Frances (now Mrs. Miller).

Dr. Smith was elected to the Assistant Staff of

the Lawrence General Hospital, Lawrence, Massachusetts, in 1919 and to the Medical Staff in 1925, and for the seven years following this latter date, he served as visiting physician to the winter service in the Medical wards. He suggested that a substitute for his service beginning November 1, 1932, be appointed, because of illness on his part, but anticipated that he would resume on December 1.

He was a valued member of Essex North District Medical Society and occupied the positions of Supervising Censor, Alternate Nominating Councilor, and was a member of the Nominating Committee of the District Society. He served faithfully on important committees of the District and State Societies.

Dr. Smith was a Mason, as a member of Cochicewick Lodge, A. F. & A. M. of North Andover and Mount Sinai R. A. Chapter of Lawrence, and was a Past Master of his Lodge, and a Past District Deputy of the 11th Masonic District, and an officer of the Grand Lodge of Massachusetts. Dr. Smith was a member of the Lawrence Medical Club. He was on the rolls of the North Andover Country Club, the North Andover Club, and the Harvard Medical Alumni Association, and served his town for twenty-five years as one of the School Committee, being chairman of the present board. Dr. Smith was school physician for a period of years.

It can be said that Dr. Smith was a worthy exponent of the general practitioner in the small town and his patients were always safe in his hands.

We, his colleagues, at the Lawrence General Hospital shall miss him and regret his absence from among us.

Committee:
J. Forrest Burnham, M.D.,
Roy V. Baketel, M.D.
Medical Staff Lawrence General Hospital.

DeMARCO — Thomas Andreas DeMarco, M.D., died at the Wesson Memorial Hospital, Springfield, Massachusetts, January 3, 1933, after a short illness. He was born in 1874 and graduated in medicine from the Facolta di Medicina e Chirurgia della Regia Universita di Napoli in 1900. He joined the Massachusetts Medical Society in 1917 and was a member of the Hampden District Medical Society, the Staff of the Mercy Hospital and the City Hospital both of Springfield.

He received the royal accolade for distinguished service in the Italian Medical Corps in the World War. King Victor Emmanuel of Italy accorded Dr. DeMarco the rank of Cavaliere in the Royal Order of the Crown of Italy in 1922. He served as Italian consular agent for his district. In 1931 while on a visit to Italy he attended many clinics and was received by Pope Pius XI and Mussolini.

Dr. DeMarco was interested in welfare and charity work in and about Springfield and prominent in the St. Vincent de Paul Society and in the Mt. Carmel Church. Dr. DeMarco leaves a widow, Mrs. Genevieve (Vesce) DeMarco, one daughter, two sons and several relations in Italy.

CLARKE — Louis Henry Clarke, M.D., died at his home in Northampton on January 15, after a long illness. Dr. Clarke was born in 1863, the son of Luther Henry Clark and Susan Pease Clark and a lineal descendant of Lieutenant William Clark who settled in Northampton in 1836. He early changed his given name of Luther to Louis and added the final e to the family name. His early education was in the schools of Northampton and premedical study with Dr. James Dunlap. He took his M.D. degree from the Columbia University College of Physicians and Surgeons in 1885. He began practice in South Hadley, Massachusetts, and moved to Holyoke in 1890. He was the fourth superintendent of the Holyoke Hospital and in recent years was associated with his son Dr. Philip H. Clarke in his own hospital at Smith's Ferry.

Dr. Clarke was a Fellow of the Massachusetts Medical Society and the American Medical Association, the local medical society, the staff of the Holyoke Hospital, a Mason and several other bodies.

Dr. Clarke married Georgiana Irene Henderson May 3, 1886. She and four children, Dr. Philip H. Clarke, Mrs. Jay Mead, Louis H. Clarke, Jr., and Donald H. Clarke, survive him.

CLARKE — William Johnson Clarke, M.D., died at his home in Milford, Massachusetts, January 17, after a sudden illness. He was born in 1843 and took his degree of M.D. from the Medical School of Harvard University in 1867 and practised up to the time of his last illness. He was a Civil War veteran and senior vice-commander of the Milford Post, G. A. R.

MAY — George Elisha May, M.D., died in New York City, January 22, 1933.

He was born in Thetford, Vermont, in 1860, graduated in Medicine from the Boston University School of Medicine in 1890 and practiced medicinè in Newton, Massachusetts, for more than forty years.

He joined the Massachusetts Medical Society in 1909. Dr. May is survived by his widow, Winifred Arnold May, a daughter, Mrs. C. R. Grossman of Austin, Texas, and a son, Lawrence Cyrus May, of Newton.

NOTICES

CLINICS IN MEDICINE AT PETER BENT BRIGHAM HOSPITAL

On Thursdays at 3:30 P.M. in the Amphitheatre of the Peter Bent Brigham Hospital Dr. Henry A. Christian, Hersey Professor of the Theory and

Practice of Physic, Harvard, and Physician-in-Chief, Peter Bent Brigham Hospital, will give a series of clinics which members of the medical profession are cordially invited to attend. The next clinic will be given on February 2.

Physicians and medical students are also invited to attend ward rounds of the Medical Staff of the Peter Bent Brigham Hospital held from 10-12 o'clock on Saturdays, as well as a clinical-pathological demonstration immediately following these rounds.

THE AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The American Board of Obstetrics and Gynecology proposes to hold the first of a series of annual dinners for Diplomates of the Board and their friends on the first day of the Scientific Session of the American Medical Association meeting in Milwaukee, at which time the successful candidates from the examination of the day before will be introduced in person. One or more addresses will be made by officers of the Board and a Round Table Conference and general discussion of the activities of the Board will follow. Diplomates expecting to be in attendance at the Scientific Session of the American Medical Association are urged to make reservation for this subscription dinner as early as possible through the office of the Secretary of this Board. Further announcements will be made through the *Journal of the American Medical Association* and the *American Journal of Obstetrics and Gynecology.*

The next written examination and review of case histories will be held in cities throughout this country and Canada, where there are Diplomates who may be empowered to conduct the examination, on April 1, 1933.

The next general, clinical examination is to be held in Milwaukee on Tuesday, June 13, 1933, immediately preceding the annual session of the American Medical Association. Reduced railroad rates will apply.

For further information and application blanks, address the Secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburgh, Pennsylvania.

TEN BEDS AVAILABLE FOR CHILDREN AT THE PRENDERGAST PREVENTORIUM

Dr. N. K. Woods, Chairman of the Prendergast Preventorium Committee of the Boston Tuberculosis Association, wishes to bring to the attention of the doctors of Boston, Massachusetts, and New England, the fact that at the Prendergast Preventorium, 1000 Harvard Street, Mattapan, there are now ten beds which could be used for the care of children who have been exposed to tuberculosis. These children would receive free medical and dental care together with efficient nursing.

The Preventorium is open for inspection at all times to the doctors and families of prospective patients.

REMOVAL

CHARLES B. DARLING, M.D., announces the removal of his office from 483 Beacon Street to 144 Commonwealth Avenue, Boston.

A REVIEW OF THE LITERATURE OF DIABETES FOR 1932

By Drs. E. P. Joslin, H. F. Root, Priscilla White, Alexander Marble, and Miss Hunt at the New England Deaconess Hospital, Friday, February 3, 1933, at 8 P.M.

Doctors and Medical Students are cordially invited.

RADIO HEALTH MESSAGES

JANUARY-FEBRUARY-MARCH, 1933

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:15 P.M.

January
31 Cancer

February
7 The Heart
14 Your Title to a Job
21 Why a Health Department?
28 Effects of Fatigue

March
7 Vacation Health
14 The Use and Abuse of Serums and Vaccines
21 Can We Prevent Diabetes?
28 Hobbies and Health

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:45 P.M.

Health Subjects of Public Interest discussed by the Division Directors of the Department.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P.M.

Questions on Health and Prevention of Disease may be sent to Radio Health Forum, State Department of Public Health, State House, Boston.

HARVARD UNIVERSITY

FREE PUBLIC LECTURES ON MEDICAL SUBJECTS

The Faculty of Medicine of Harvard University offers a course of free public lectures on medical subjects, to be given at the Medical School, Longwood Avenue, Boston, on Sunday afternoons, beginning January 8 and ending March 26, 1933. The lectures will begin at four o'clock and the doors will be closed at five minutes past the hour. No tickets are required.

SUNDAY AFTERNOONS AT FOUR O'CLOCK

January 29—Dr. W. B. Lancaster: Sparing the Eyes.

February 5—Dr. G. P. Grabfield: Rheumatism.

February 12—Dr. G. H. Wright: Color Changes in the Mouth and Teeth: an Aid in Diagnosis of Systemic Disease.

February 19—Dr. W. H. Robey: Let the Head Govern the Heart.

February 26—Dr. H. R. Viets: Nerve, Nerves, and Nervousness.

March 5—Dr. E. L. Oliver: The Care of the Skin and Scalp.

March 12—Dr. Shields Warren: Cancer and Radiation Therapy.

March 19—Dr. Randall Clifford: The Tuberculosis Problem Today.

March 26—Dr. W. G. Smillie: A Discussion of the Common Cold.

REPORTS AND NOTICES OF MEETINGS

THE BROOKFIELD MEDICAL CLUB

The Brookfield Medical Club held its four hundred ninety-sixth regular meeting at Brookfield, Massachusetts, Wednesday, January 18, at Louise Galloway's in Brookfield, with Dr. D. M. Ryan acting host and Dr. Roy J. Heffernan of Boston speaking on the subject "The Newer Obstetrics."

J. R. FOWLER, M.D., *Secretary.*

THE ANNUAL MEETING OF THE NEW ENGLAND WOMEN'S MEDICAL SOCIETY

The annual meeting of the New England Women's Medical Society was held in the Hotel Statler, January 20, 1933.

The officers elected for the ensuing year are Dr. Mabel Ordway of Jamaica Plain, president; Dr. Ella Cahill of Cambridge, vice-president; Dr. Marjorie Woodman of Jamaica Plain, treasurer, and Dr. Elizabeth Broyles of Wellesley College, secretary.

More than forty members were in attendance.

NEW ENGLAND PEDIATRIC SOCIETY

The New England Pediatric Society met in the afternoon and evening of Friday, December 9. The afternoon meeting in the amphitheatre of the Children's Hospital was devoted to the presentation of cases.

The Orthopedic Department presented cases illustrating three important childhood deformities, namely, congenital torticollis, congenital dislocation of the hip, and pronated foot. In congenital torticollis early surgical treatment followed by immobilization is the only method of cure. The diagnosis of "congenital hip" can be made before the child begins to walk. There is apparent shortening of the femur and a higher inguinal fold on the affected side. The condition is rather easily treated with immobilization in extreme abduction, the most suitable time for this being under two years of age. Dr. Ober, in closing, discussed and demonstrated the condition of pronated, erroneously called "flat foot". This is one of the commonest causes of chronic fatigue in children.

Dr. W. E. Ladd presented the next case. A male child, seven years and one month of age, entered the hospital complaining of abdominal pain of one week's duration. A week before admission the patient had been awakened from sleep at three A.M. with abdominal pain in the region of his umbilicus, causing him to double up in bed. After two hours he vomited, with subsequent relief, and went back to sleep. At four P.M. the same day he was again seized with periumbilical pain followed by vomiting, and during the ensuing week he was troubled in the middle of almost every night with the same pain. He became listless and apathetic. Physical examination on entry was essentially negative except for pharyngeal infection and the presence of hard fecal matter in the descending colon. Although he gave a history of having been infected with pinworms, none were found. The white blood count was 10,500; the red count and urine were within normal limits. The phenolsulphonphthalein test showed 50 per cent excretion of the dye. A barium enema showed a "mobile cecum," and exploration revealed an inflamed Meckel's diverticulum. Convalescence was uneventful. Dr. Ladd emphasized that a diverticulum is not to be removed in the same way as an appendix, but the surgeon must be careful in suturing the base of the diverticulum after it has been clamped off in such a way as not to constrict the gut, and thus avoid subsequent obstruction due to edema plus constriction.

Dr. Ladd also deplored the "routine appendectomy" for vague abdominal symptoms, and said that the true cause of the trouble is always to be carefully sought. In regard to inflammation of a Meckel's diverticulum, hemorrhage occurred in 60 per cent of 42 cases at the Children's Hospital. Perforation of an ulceration of the diverticulum is not uncommon. When the diverticulum is inflamed, it is most always diagnosed appendicitis. Such a diverticulum may cause obstruction by running over a loop of bowel. Nine cases of inversion of a diverticulum into the bowel with resultant intussusception were found. A diverticulum was demonstrated by x-ray in one case.

Dr. L. K. Diamond presented a female child, seven and one-half years old, complaining of left upper quadrant pain, chills and fever. The trouble commenced several months before entry, three days after the child's mother had had chills and fever every other day for a short time. The patient improved after a week, but one month later another chill and temperature rise occurred. The same series of events followed a short time thereafter. The past history and family history were not significant. Both the patient and her mother were

born and have always lived in this country. Physical examination showed an enlarged spleen; the white count was 9,000. After a chill, which occurred in the hospital, the red blood cells were observed to be loaded with tertian malarial parasites.

Dr. Elliott S. Robinson discussed diphtheria toxoid and toxin-antitoxin. The chief objection to the use of the latter is the fear of sensitization to horse serum, which is not found in toxoid. The amount of horse serum in toxin-antitoxin, however, is considered by Dr. Robinson to be far too small to produce sensitization. Three-week intervals between doses are advocated in the use of either of the two immunizing substances. Toxoid is not advised for use in children over six years. There is probably a very slightly higher percentage of immunity obtained with toxoid than with toxin-antitoxin. Dr. Bret Ratner added that he knows of no authenticated case of sensitization recorded after the use of toxin-antitoxin mixture.

The next speaker was Dr. Edwin T. Wyman, who spoke of the use of powdered ripe banana in the feeding of infants. This easily digested, high vitamin substance is very valuable in the treatment of acute and chronic nutritional disturbances. Dr. Wyman also demonstrated a "Sunnest," a "cel-o-glass" cage which will fit in an ordinary window and hold a small child while allowing exposure to the ultraviolet of the sun's rays.

Dr. McKhann presented an interesting case of argyria in a girl aged nine. The etiology of the condition presumably is the overuse of neosilvol nose drops during the past few winters. The child had received drops three times daily for six or seven months each year. Pathologically in these cases silver is demonstrable in the corium of the skin and the connective tissue in all the organs except the brain and cord. It gives no symptoms, lasts throughout life, and there is no treatment.

Dr. Bret Ratner of New York addressed the evening meeting on "The Allergic Child."

Dr. Ratner pointed out how ubiquitous allergy is in the entire field of medicine and explained that much of his recent work has been on allergy in children. That the condition is very common is readily seen when we recall the frequency with which asthma, eczema, hay fever and urticaria are seen. Allergy is probably not inherited as a mendelian character, in the speaker's opinion. Fifty percent of patients have a negative family history, and the fact remains that if the antigen gets into the body, the patient acquires a changed reactive capacity, or in other words, becomes allergic. Antibodies have been demonstrated to pass through the human placenta, which will explain the so-called congenital hypersensitiveness in children.

Dr. Ratner is a firm believer in the school which subscribes to the identity of animal anaphylaxis and human allergy, and cited experiments tending to prove this point.

In taking a history in the allergic child, the following points are of interest: (1) Is there a general history of allergy? Questioning into chronicity, recurrences and periodicity is indicated. (2) The detailed history of the onset of the condition. (3) Diseases and conditions preceding the onset. Administration of sera and removal of tonsils and adenoids are to be considered. (4) The character of the attacks, the time of the day, of the year and other similar circumstances. (5) Antepartum and postpartum history of food idiosyncrasies or cravings. It has been found in one instance that a child may be allergic to egg if the mother ate an unusual number of eggs during her pregnancy, and other instances of this type have been reported by Dr. Ratner. (6) Contacts—environmental, occupational, animal pets. (7) The exact account of the last typical attack.

So far as a physical examination is concerned the allergic child fits into every so-called physical and mental body "type," and there is no special "asthma type" of child.

Dr. Ratner emphasized the importance of thoroughness when diagnostic skin testing is to be done, even though the task seems stupendous. Desensitization is spontaneous or artificial, and the two artificial methods are: (1) by skin and (2) by mouth. Artificial desensitization should be carried out very cautiously and the dose never increased if there is a local reaction. Elimination of the offending substances from the food or environment is essential.

The concept of "crossed anaphylactic relationship" was introduced when it was pointed out that contact with horse dander may later be followed by allergic manifestations to horse serum. This may explain the hypersensitiveness to horse serum and even death from a primary injection, in some individuals without any demonstrable previous contact with the serum. Preliminary testing may result in a systemic reaction and such an individual should be regarded as a risk and treated guardedly with serum.

Thyroid extract should always be thought of in treating obstinate eczemas, for in certain instances it is of very definite value. A good indication for this is the backward development of the carpal bones.

Dr. Hans Zinsser, in discussing the evening's paper, stated that allergy and anaphylaxis are primarily clinical subjects, although much help can be obtained from the laboratory. He also wished to emphasize the similarity of animal anaphylaxis and human hypersensitiveness. The general principles are the same, but animals and man differ in certain details. For instance, in man there is less tendency to generalized shock, and local shock is more common. Dr. Zinsser believes the ophthalmic test for hypersensitivity to be a better indicator of danger than skin tests.

Dr. Harold Stuart pointed out the things to be learned about allergy from studying the normal child and comparing him with the allergic one. All children are unstable and show more marked

individual reactions and variations than do adults. Every normal child goes through a phase bordering on the allergic state, where there is a greater absorption of foreign proteins than in later life. The beginning of allergy in normal children is always to be sought. One more very important point stressed by Dr. Stuart is that the allergic state is not stationary in children, but that the child is constantly changing in its specific hypersensitivities.

FRACTURE MEETING

There will be a conference under the auspices of the Fracture Service of the Massachusetts General Hospital, Friday evening, January 27, at 8 o'clock, in the Lower Out-Patient Amphitheatre. Subjects, Fractures of Ribs, Dr. Balch; Fractures in Region of Elbow, Dr. Harmer; Fractures of the Hip, Dr. Reggio. House officers, students and visitors welcome.

PHILIP D. WILSON, M.D., *Associate Chief.*

MASSACHUSETTS TUBERCULOSIS LEAGUE

The Semi-Annual Meeting of the Massachusetts Tuberculosis League has been called for Monday, February 6, at 2:30 P.M., at the Hotel Statler.

A further notice will appear in next week's issue.

BOSTON CITY HOSPITAL

Staff Clinical Meeting
Tuesday, January 31, 1933, at 8:15 P.M.
Cheever Amphitheatre

Intracranial Mastoid Complications. Drs. Harry P. Cahill and Chester R. Mills.

Complications of Nasal Accessory Sinus Disease. Dr. Louis M. Freedman.

New Growths of the Nose and Throat. Drs. Harry P. Cahill, Louis M. Freedman, Edward J. Monahan.

Bronchoscopic Observations of Lung Complications. Dr. Louis M. Freedman.

Cataract (mature) Bilateral. Epidermoid Carcinoma of eyelids, nose and cheek (orbital complications). Treatment by Radium. Dr. Jeremiah J. Corbett.

Neuropathic Keratitis. Dr. Robert W. French.

Enucleations. Dr. Robert W. French.

Glaucoma. Dr. Harry Schwartzman.

COMMITTEE ON HOSPITAL CLINICS.

SOCIETY MEETINGS
CONGRESSES AND CONFERENCES

January 27—Fracture Meeting (Massachusetts General Hospital). See notice elsewhere on this page.

January 29 - March 26—Harvard University. Free Public Lectures on Medical Subjects. See page 233.

January 31—Boston City Hospital. See notice above.

February 2—Clinics in Medicine at Peter Bent Brigham Hospital. See page 232.

February 3—A Review of the Literature of Diabetes for 1932. See page 233.

February 6-10—The American College of Physicians. See page 765, issue of October 27.

February 6—Massachusetts Tuberculosis League. See notice above.

February 8—The New England Dermatological Society. See notice on page 174, issue of January 19.

February 8 - April 5—The New England Heart Association. See page 1011, issue of December 1.

February 10 - May 12—William Harvey Society. See page 765, issue of October 27.

February 16 - May 17—New England Physical Therapy Society. See schedule on page 1010, issue of December 1.

February 17 and 18—The New England Hospital Association. See notice on page 911, issue of November 17.

April 1 and June 13—The American Board of Obstetrics and Gynecology. See page 233.

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

May 3—Wednesday, Annual Meeting. Program to be announced.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Tentative Program

Wednesday, February 1, 1933—Council Meeting, Boston.

Wednesday, March 8, 1933—Lynn Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Soma Weiss, Boston City Hospital. Subject: Arterial Hypertension.

Wednesday, April 5, 1933—Essex Sanatorium, Middleton. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Wilson G. Smillie, Professor of Public Health Administration, School of Public Health, Harvard University. Subject: Common Colds.

Thursday, May 4, 1933—Censors' Meeting, Salem Hospital. 3:30 P. M.

Tuesday, May 9, 1933—Annual Meeting. Salem Country Club, Forest Street, Peabody. Golf in afternoon; greens fee $2.00. Dinner at 7 P. M. Speaker: Dr. George Burgess Magrath. Subject to be announced later. Ladies invited.

R. E. STONE, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held at the Weldon in Greenfield on the second Tuesday of March and May.

CHARLES MOLINE, Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The program of the Middlesex East District Medical Society for the coming year is as follows:

March 15 at Melrose.

May, at the Meadowbrook Club, Reading.

ALLAN R. CUNNINGHAM, Secretary.

NORFOLK DISTRICT MEDICAL SOCIETY

January 31, 1933—See page 174, issue of January 19.

February 28, 1933—Time and place to be announced. "The Diagnosis and Treatment of Anemia," by Dr. William P. Murphy.

March 28, 1933—Time, place and subject to be announced. Speaker will be Dr. J. P. O'Hare.

May—Annual Meeting. Time, place and subject to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary.
1695 Beacon Street, Brookline.

SUFFOLK DISTRICT MEDICAL SOCIETY

Wednesdays at 8:15 P. M.

March 29, 1933—Clinical Program, Massachusetts General Hospital.

April 26, 1933—Annual Meeting. Election of Officers. Scientific Program—Titles and speakers to be announced later.

The Medical Profession is cordially invited to attend these meetings.

WILLIAM H. ROBEY, M.D., President,
LELAND S. McKITTRICK, M.D., Secretary.

WORCESTER DISTRICT MEDICAL SOCIETY

Wednesday, February 8—Dinner and scientific meeting at the Worcester State Hospital. Program to be announced later.

Wednesday, March 8—Dinner and scientific program at the Memorial Hospital, Worcester. Program to be announced later.

Wednesday, April 12—Dinner and scientific meeting at the Rutland State Hospital. Scientific program to be announced later.

Wednesday, May 10—The Annual Meeting. Place and program to be announced later.

ERWIN C. MILLER, Secretary.